

WHAT IS CLAIMED IS:

- 1. A ready-to-use composition for dyeing fibers, comprising:
- (i) at least one cationic direct dye chosen from compounds of formulae (I),(II), (III), (III') and (IV) below, and
 - (ii) at least one thickening polymer;
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R'_3 \\ N \end{pmatrix} - N \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 R_1 and R_2 , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and C_1 - C_4 alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$ radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from C_1 - C_4 alkyl radicals;

R₃ and R'₃, which may be identical or different, are chosen from a hydrogen

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atom, halogen atoms, a cyano radical, C_1 - C_4 alkyl radicals, C_1 - C_4 alkoxy radicals and acetyloxy radicals,

X is chosen from anions,

A is chosen from structures A_1 to A_{19} below:

R ₄ R ₄ A ₁	R ₄	R ₄ -N _N A ₃
R ₄ -N	; N-N' ₊ ; R ₄ N R ₄ A ₅	N-N+ N-N+
R ₄ R ₄ R ₄ N+ N+ N+ R ₄ A ₇		R ₄ N N R ₄ A ₉
N-N-R ₄ R ₄	N=N+ R ₅ A ₁₁	R ₄ O N+ R ₄
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	; R ₄	; N N+ R ₄ S A ₁₅

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and

in which:

 $R_4$  is chosen from  $C_1\text{-}C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

R₅ is chosen from C₁-C₄ alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

(b) wherein said compounds of formula (II) are chosen from compounds of

formula:

$$B-N=N$$

$$X$$

$$R_{g}$$

$$R_{7}$$

$$R_{1}$$

$$R_{2}$$

$$R_{3}$$

$$R_{4}$$

$$R_{7}$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X⁻ is chosen from anions,

B is chosen from structures  $B_1$  to  $B_6$  below:



$$R_{10}$$
 $R_{10}$ 
 $R$ 

in which:

 $R_{10}$  is chosen from  $C_1\text{-}C_4$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

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$$E-D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$(III)$$

$$E-D_{1} = D_{2}$$

$$X - R_{17} - R_{16}$$

$$(III')$$

in which:

R₁₃ is chosen from a hydrogen atom, C₁-C₄ alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

 $R_{15}$  is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH

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group and m = 0,

X⁻ is chosen from anions,

E is chosen from structures  $E_1$  to  $E_8$  below:

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and

in which R' is chosen from  $C_1\text{-}C_4$  alkyl radicals;

wherein when m = 0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

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G is chosen from structures  $G_1$  to  $G_3$  below:

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

R₁₉ is chosen from C₁-C₄ radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1\text{-}C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  ${}^+R_{22}(X^-)_r$  radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an O anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

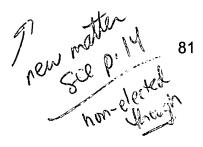
X⁻ is chosen from anions;

wherein R₂₂ is O, r is zero;

wherein if K or P or M is  $C_1$ - $C_4$ -N⁺-alkyl X⁻, either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

0

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wherein if K is -N  $^{+}R_{22}(X^{-})_{r}$ , M and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

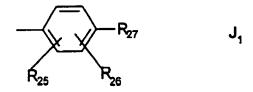
wherein if M denotes -N  ${}^{+}R_{22}(X^{-})_r$ , K and P are the same and are chosen from a -CH radical and -C( ${}^{+}C_4$  alkyl) radicals;

if P is -N  $^{+}R_{22}(X^{-})$ , when M are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is  $-NR_{22}$  with  $R_{19}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals, at least one of the radicals  $R_{18}$ ,  $R_{20}$  and  $R_{21}$  of  $G_2$  is not chosen from  $C_1$ - $C_4$  alkyl radicals; J is chosen from:

(1) radicals chosen from structure J₁ below:



in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least

one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals, an amino radical, a phenyl radical, and
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and

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- (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.
- 2. The composition according to claim 1, wherein said fibers are keratin fibers.
- 3. The composition according to claim 2, wherein said keratin fibers are human hair.
- 4. The composition according to claim 1, wherein said halogen atoms of  $R_3$ ,  $R_3$ ,  $R_8$ ,  $R_9$ , and  $R_{15}$ , which may be identical or different, are chosen from chlorine, bromine, iodine and fluorine.
- 5. The composition according to claim 1, wherein said anions are chosen from chloride, methyl sulfate, acetate, and perchlorate.
- 6. The composition according to claim 1, wherein said heterocycle formed from  $R_6$  and  $R_7$  comprises a heteroatom chosen from oxygen and nitrogen.
- 7. The composition according to claim 1, wherein said at least one cationic direct dye chosen from compounds of formula (I) are chosen from compounds of formulae (I 1) to (I 54) below:

$$N$$
 $N = N$ 
 $N = N$ 

$$\begin{array}{c|c} CH_3 \\ \hline \\ CH_3 \\ \hline \\ CH_3 \\ \end{array} CI \qquad (I2)$$

$$H_3C-N+$$
  $CH$   $CH_3$   $CH_3$   $CH_3$ 

$$HO-H_4C_2-N+$$
  $CH=CH CH_3$   $CI$   $(I6)$ 

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$$H_3C-N+$$
 $CH$ 
 $CH$ 
 $CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (I9)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (I9)$$

$$N = N + N + N = N - NH_2 \qquad CI \qquad (110)$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$C_{2}H_{4}$$
-CN

 $C_{2}H_{4}$ -CN

 $C_{2}H_{4}$ -CN

 $C_{2}H_{4}$ -CN

 $C_{2}H_{4}$ -CN

$$N+$$
 $N=N NH_2$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=N NH_2$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 
 $CI^ CI^ CH_3$ 
 $CI^ CI^ CH_3$ 
 $CI^ CI^ CI$ 

$$CH_3 \longrightarrow N+ N=N \longrightarrow NH_2 \qquad CI \qquad (I16)$$

$$CH_3 \longrightarrow N+ CH_3$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_2H_5$ 

$$\begin{array}{c|c}
CH_3 \\
N \\
N \\
CH_3
\end{array}$$

$$C_2H_5$$

$$CI \cdot (119)$$

$$CH_3$$
 $N$ 
 $N=N$ 
 $CH_2$ 
 $CH_2$ - $CH_2$ - $OH$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+\\
N+\\
CH_3
\end{array}$$

$$CH_3 \\
CH_3$$

$$CH_3$$

$$C$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (I24)$$

$$CH_3 \qquad CH_3 \qquad CI$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
\end{array}$$

$$\begin{array}{c|c}
NH_2 \\
\end{array}$$
C1 (126)

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N = N - NH - NH_2 \qquad CI^{-1} \qquad (I31)$$

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$$CH_3$$
  $CI$  (133)

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (136)$$

$$CH_3 \qquad CI$$

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$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $O-CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $O$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
S & CH_3 \\
N - N + CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 & CI - (140)
\end{array}$$

$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$\begin{array}{c|c}
 & C_2H_5 \\
\hline
 & N+ \\
 & N=N \\
\hline
 & CH_3 \\
\hline
 & CH_3SO_4
\end{array}$$
(149)

$$N+$$
 $N=$ 
 $N$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CI$ 

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_2-CH_2-CN \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_2-CH_2-CN \\
 & CH_3
\end{array}$$

- 8. The composition according to claim 7, wherein said at least one cationic direct dye chosen from compounds of formula (I) are chosen from said compounds of formulae (I1), (I2), (I14) and (I31).
- 9. The composition according to claim 1, wherein said at least one cationic direct dye chosen from compounds of formulae (II) are chosen from compounds of formulae (II1) to (II9) below:

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$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N CH_3$   $CH_3$   $CH_3$   $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$H_2N$$
 $N \cdot N + N + N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

10. The composition according to claim 1, wherein said at least one cationic direct dye chosen from compounds of formula (III) are chosen from compounds of formulae (III1) to (III18) below:

$$\begin{array}{c|c}
 & CH = N - N \\
 & CH_3
\end{array}$$

$$CI \cdot (III1)$$

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$$H_3C$$
 $N$ 
 $CH_3$ 
 $CH=N-N$ 
 $CH_3$ 
 $CH=N-N$ 
 $CH_3$ 
 $CH=N-N$ 
 $CH=N$ 
 $CH=N$ 

$$H_3C$$
 $N$ 
 $CH=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CI$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$

$$CH=N-N$$

$$CH_3$$

$$CI$$

$$CI$$

$$CI$$

$$CI$$

$$CH=N-N-CH_3$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH=N-N CH_3SO_4 (III11)$$

$$CH_3SO_4 (III11)$$

$$CH=N-N$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$CH=CH$$
 $CH_3$ 
 $CH_3COO$  (III15)

$$H_3C-N+$$
 $CH=CH NH_2$ 
 $CH_3COO^{-}$ 
(III16)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $CI$ 
 $(III17)$ 
 $CH_3$ 

$$CI \longrightarrow N=N \longrightarrow CI$$
 (III18)
$$H_3C \longrightarrow N+$$

$$CH_3$$

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- 11. The composition according to claim 10, wherein said at least one cationic direct dye chosen from compounds of formula (III) are chosen from said compounds of formulae (III4), (III5) and (III13).
- 12. The composition according to Claim 1, wherein said at least one cationic direct dye chosen from compounds of formula (III') are chosen from compounds of formulae (III'1) to (III'3) below:

$$CH_3$$
  $N+$   $CH=CH$   $CI$   $(III'2)$  ; and

$$N \xrightarrow{CH_3} N = N \xrightarrow{CH_3} CI_{-} (III.3)$$

13. The composition according to Claim 1, wherein said at least one

cationic direct dye chosen from compounds of formula (IV) are chosen from compounds of formulae (IV)₁ to (IV)₇₇ below:

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$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N \longrightarrow OH \qquad (IV)_2$$

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$

$$N = N - CH_2CH_2OH CH_2CH_2OH CH_2CH_2OH$$

$$N+N=N-N+2$$

$$N+N=N-N+2$$

$$(IV)_5$$

$$N+N=N-N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+N=N$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$V_{N+}^{C_1} N = N - V_{C_2H_5}^{C_2H_5}$$
 $V_{C_2H_5}^{C_2H_5}$ 
 $V_{C_2H_5}^{C_2H_5}$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ N=N \end{array} \longrightarrow \begin{array}{c} CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \end{array} \qquad \text{(IV)}_{12}$$

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$$\begin{array}{c|c}
CH_3 \\
N+N=N-N+2
\end{array}$$

$$\begin{array}{c|c}
-NH_2 \\
\end{array}$$

$$\begin{array}{c|c}
(IV)_{13}
\end{array}$$

$$H_3C \longrightarrow N+ N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N$$
 $O-N$ 
 $O-$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
\hline
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$
(IV)₁₇

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$$\begin{array}{c|c} CH_3 & NHCOCH_3 \\ \hline N+N=N & CH_3 \\ \hline CH_3 & CH_3 \end{array}$$

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$H_3C$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$N+N=N-V_{C_2H_5}$$
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₂₃

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
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$$N=N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$N=N - CH_2CH_2OH CH_2CH_2OH$$

$$CH_2CH_2OH CH_2OH CH_2OH$$

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$\begin{array}{c|c} & & & \\ N+ & N=N & & \\ \hline & CH_3 & \\ & CH_3SO_4 & \\ \end{array}$$

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$$CH_3$$
 $N+N=N-N+2$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & \\ & N+ & N=N & & \\ & & & \\ & CH_3 & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$(IV)_{32}$$

$$\begin{array}{c|c} & CI \\ \hline N+ & N=N \\ \hline CH_3 \\ CH_3SO_4 \\ \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \\ \end{array}$$

$$\begin{array}{c} (IV)_{33} \\ \end{array}$$

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$$H_{3}C \xrightarrow{N+} N=N \xrightarrow{C} -N \xrightarrow{H} (IV)_{34}$$

$$CH_{3}SO_{4}^{-}$$

$$\begin{array}{c|c} H_3C & & \\ N+ & N=N & \\ & CH_3 & \\ & CH_3SO_4 \end{array}$$
 (IV)₃₅

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ &$$

$$N=N - CH_3$$

$$CH_3 SO_4$$

$$CH_3$$

$$CH_3 SO_4$$

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$$\begin{array}{c|c}
CI \\
N=N \\
\hline
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

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$$N=N \xrightarrow{N+COCH_3} N+C_2H_5SO_4$$

$$C_2H_5SO_4$$

$$C_2H_5$$

$$C_2H_5$$

$$C_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N = N$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c} & CH_3 \\ \hline N+N=N-N \\ \hline OCH_3 \\ CH_3SO_4 \\ \end{array}$$

$$\begin{array}{c} CH_3 \\ \hline C_6H_5 \\ \end{array}$$

$$\begin{array}{c} (IV)_{44} \\ \hline \end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline CH_3 & CIO_4 \end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+N=N \\
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

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$$H_3C \longrightarrow N+ N = N \longrightarrow NH$$

$$CIO_4 OH$$

$$OH$$

$$(IV)_{50}$$

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$$\begin{array}{c|c}
 & S \\
 & N+ \\
 & N=N \\
 & CI \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & O \\
 & NH
\end{array}$$

$$\begin{array}{c|c}
 & (IV)_{51}
\end{array}$$

$$N+ N=N - NH_2$$

$$OCH_3$$
(IV)₅₃

$$\begin{array}{c|c} CH_3 \\ N+ N=N \\ OCH_3 \\ CIO_4 \\ NH_2 \end{array}$$

$$\begin{array}{c|c} CH_3 \\ NH_2 \\ \end{array}$$

$$(IV)_{55}$$

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$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$\begin{array}{c|c} & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$N+N=N$$
 $CH_3$ 
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 $CH_3$ 

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$$\begin{array}{c|c}
O_2N & CH_3 \\
& CH_3
\end{array}$$
(IV)₆₃

$$N+N=N$$
 $CH_3$ 
 $CH_3SO_4$ 
 $NO_2$ 
 $CH_3$ 

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
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(IV)₆₉

$$\begin{array}{c|c} & NH_2 \\ \hline N+N=N-N+2 \\ \hline O-CH_3 \end{array}$$
 (IV)₇₀

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 &$$

$$N = N - NH_2$$

$$V = N - NH_2$$

$$\begin{array}{c} \text{CH}_2\text{CH}_2\text{OH} \\ \text{CH}_2\text{CH}_2\text{OH} \\ \text{CH}_2\text{CH}_2\text{OH} \\ \text{CH}_3 \\ \text{CH}_3 \\ \text{CH}_3 \\ \end{array}$$

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$$N = N \longrightarrow NH_{2}$$

$$CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N=N \xrightarrow{\text{CH}_3} NH_2$$

$$\downarrow N+ \\ \downarrow CH_3 SO_4 \xrightarrow{\text{NH}_2} (IV)_{75}$$

$$CH_3$$
 $N+N=N$ 
 $N+N=N$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
\end{array}$$

$$(IV)_{77}$$

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- 14. The composition according to claim 1, wherein said at least one cationic direct dye is present in an amount ranging from 0.001 to 10% by weight relative to the total weight of the composition.
- 15. The composition according to claim 14, wherein said at least one cationic direct dye is present in an amount ranging from 0.005 to 5% by weight relative to the total weight of the composition.
- 16. The composition according to claim 1, wherein said at least one thickening polymer is chosen from said nonionic amphiphilic polymers, wherein said at least one hydrophilic unit is chosen from celluloses modified with at least one unit comprising a fatty chain.
- 17. The composition according to claim 16, wherein said celluloses are chosen from hydroxyethylcelluloses, and wherein said at least one unit comprising a fatty chain is chosen from alkyl, aralkyl, and alkylaryl groups and mixtures thereof.
- 18. The composition according to Claim 17, wherein said at least one unit comprising a fatty chain is chosen from  $C_8$ - $C_{22}$  chains.
- 19. The composition according to claim 17, wherein said at least one unit comprising a fatty chain is chosen from  $C_{16}$  alkyl groups.
- 20. The composition according to claim 16, wherein said at least unit comprising a fatty chain is chosen from polyalkylene glycol alkylphenyl ethers.
  - 21. The composition according to Claim 20, wherein said polyalkylene

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glycol alkylphenyl ethers are polyethylene glycol (15) nonylphenyl ether.

- 22. The composition according to claim 1, wherein said at least one thickening polymer chosen from nonionic amphiphilic polymers, and further wherein said hydrophilic unit is chosen from hydroxypropylguars modified with at least one unit comprising a fatty chain.
- 23. The composition according to claim 22, wherein said at least one unit comprising a fatty chain is chosen from  $C_{14}$ ,  $C_{20}$ , and  $C_{22}$  alkyl chains.
- 24. The composition according to claim 1, wherein said at least one thickening polymer is chosen from nonionic amphiphilic polymers, and further wherein said at least one hydrophilic unit is chosen from polyurethane ethers comprising at least one unit comprising a fatty chain chosen from C₈-C₃₀ alkyl and alkenyl chains.
- 25. The composition according to claim 1, wherein said at least one thickening polymer chosen from nonionic amphiphilic polymers is chosen from copolymers of vinylpyrrolidone and of hydrophobic monomers containing a fatty chain.
- 26. The composition according to claim 25, wherein in said copolymers are chosen from vinylpyrrolidone/hexadecene copolymers and vinylpyrrolidone/eicosene copolymers.
  - 27. The composition according to claim 1, wherein said at least one

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thickening polymer chosen from nonionic amphiphilic polymers is chosen from copolymers of  $C_1$ - $C_6$  alkyl methacrylates and of  $C_1$ - $C_6$  alkyl acrylates and of amphiphilic monomers comprising at least one fatty chain.

- 28. The composition according to claim 27, wherein said thickening polymer chosen from nonionic amphiphilic polymers is chosen from oxyethylenated methyl methacrylate/stearyl acrylate copolymers.
- 29. The composition according to claim 1, wherein said at least one thickening polymer chosen from nonionic amphiphilic polymers is chosen from copolymers of hydrophilic methacrylates and of hydrophilic acrylates and of hydrophobic monomers comprising at least one fatty chain.
- 30. The composition according to claim 29, wherein said at least one thickening polymer chosen from nonionic amphiphilic polymers is chosen from polyethylene glycol methacrylate/lauryl methacrylate copolymers.
- 31. The composition according to claim 1, wherein said at least one thickening polymer chosen from nonionic amphiphilic polymers is chosen from: cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, and polyethylene glycol methacrylate/lauryl methacrylate.
  - 32. The composition according to claim 1, wherein said at least one

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thickening polymer is chosen from said anionic amphiphilic polymers, and further wherein said at least one hydrophilic unit comprises an unsaturated ethylenic anionic monomer and said at least one unit comprising a fatty chain is chosen from allyl ethers comprising a fatty chain.

- 33. The composition according to claim 32, wherein said unsaturated ethylenic anionic monomer is chosen from vinylcarboxylic acids.
- 34. The composition according to claim 33, wherein said vinylcarboxylic acids are chosen from acrylic acid, methacrylic acid and mixtures thereof.
- 35. The composition according to claim 32, wherein said the allyl ethers comprising a fatty chain are chosen from monomers of formula (V) below:

in which:

R' is chosen from H and CH₃,

B is an ethylenoxy radical,

n is zero or is chosen from an integer ranging from 1 to 100, and

R is chosen from hydrocarbon-based radicals chosen from alkyl and cycloalkyl radicals comprising from 8 to 30 carbon atoms.

36. The composition according to Claim 35, wherein said hydrocarbon-based radicals are chosen from alkyl radicals comprising from 10 to 24 carbon atoms.

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- 37. The composition according to claim 36, wherein said R' is a hydrogen atom, n is equal to 10, and R is a stearyl radical.
- 38. The composition according to claim 32, wherein said at least one thickening polymer chosen from said anionic amphiphilic polymers is crosslinked.
- 39. The composition according to claim 32, wherein said at least one thickening polymer chosen from anionic amphiphilic polymers is a polymer formed from a mixture of monomers comprising acrylic acid, a crosslinking agent, and an ester of formula (VII) below:

$$CH_2 = C - C - OR^2$$
 (VII)

in which:

R1 is chosen from H and CH3, and

R² is chosen from alkyl radicals comprising from 12 to 22 carbon atoms.

- 40. The composition according to claim 32, wherein said at least one thickening polymer chosen from anionic amphiphilic polymers is a polymer of acrylic acid and of lauryl methacrylate.
- 41. The composition according to claim 1, wherein said anionic amphiphilic polymer is formed by emulsion polymerization of:

from 20 to 60% by weight of an acid chosen from acrylic acid, methacrylic acid, and mixtures thereof;

from 5 to 60% by weight of acrylates chosen from lower alkyl (meth)acrylates; from 2 to 50% by weight of allyl ethers containing a fatty chain, and from 0 to 1% by weight of a crosslinking agent,

wherein said the allyl ethers comprising a fatty chain are chosen from monomers of formula (V) below:

in which:

R' is chosen from H and CH₃,

B is an ethylenoxy radical,

n is zero or is chosen from an integer ranging from 1 to 100, and
R is chosen from hydrocarbon-based radicals chosen from alkyl and
cycloalkyl radicals comprising from 8 to 30 carbon atoms.

- 42. The composition according to claim 41, wherein said polymer is a crosslinked polymer comprising 40% by weight of methacrylic acid residue, 50% by weight of ethyl acrylate residue and 10% by weight of polyethylene glycol (10 EO) stearyl ether residue.
- 43. The composition according to claim 1, wherein said at least one thickening polymer chosen from said anionic amphiphilic polymers is chosen from crosslinked terpolymers of methacrylic acid, of ethyl acrylate, of polyethylene glycol (10 EO) stearyl ether.

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- 44. The composition according to claim 43, wherein said at least one thickening polymer chosen from said anionic amphiphilic polymers is chosen from crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether.
- 45. The composition according to claim 44, wherein said at least one thickening polymer chosen from said anionic amphiphilic polymers is in the form of an aqueous 30% emulsion of said crosslinked terpolymer.
- 46. The composition according to claim 1, wherein said at least one thickening polymer is chosen from anionic amphiphilic polymers, wherein said at least one hydrophilic unit is chosen from unsaturated olefinic carboxylic acids and further wherein said at least one unit comprising a fatty chain is chosen from  $(C_{10}-C_{30})$ alkyl esters of unsaturated carboxylic acids.
- 47. The composition according to claim 46, wherein said hydrophilic unit is chosen from monomers of formula (VI) below:

$$CH_2 = C - C - OH$$
 (VI)

in which  $R^{1}$  is chosen from  $H,\,CH_{3}$  , and  $C_{2}H_{5}.$ 

48. The composition according to claim 47, wherein said hydrophilic unit is chosen from acrylic acid, methacrylic acid and mixtures thereof.

49. The composition according to claim 47, wherein said at least one unit comprising a fatty chain is chosen from esters of monomers of formula (VII) below:

$$CH_2 = C - C - OR^2 \qquad (VII)$$

$$\begin{vmatrix} 1 & 1 \\ R^1 & O \end{vmatrix}$$

in which:

 $R^1$  is chosen from H,  $CH_3$ , and  $C_2H_5$ , and  $R^2$  is chosen from  $C_{10}$ - $C_{30}$  alkyl radicals.

- 50. The composition according to claim 49, wherein said R¹ is chosen from H and CH₃.
- 51. The composition according to claim 49, wherein said  $R^2$  is chosen from  $C_{12}$ - $C_{22}$  alkyl radicals.
- 52. The composition according to claim 46, wherein said (C₁₀-C₃₀)alkyl esters of unsaturated carboxylic acids are chosen from lauryl acrylate, stearyl acrylate, decyl acrylate, isodecyl acrylate, dodecyl acrylate and the corresponding methacrylates, lauryl methacrylate, stearyl methacrylate, decyl methacrylate, isodecyl methacrylate and dodecyl methacrylate.
- 53. The composition according to claim 46, wherein said at least one thickening polymer chosen from said anionic amphiphilic polymers is chosen from:

  polymers formed from a mixture of acrylic acid and lauryl methacrylate

monomers, and

crosspolymers of acrylates/C10-30 alkyl acrylates.

- 54. The composition according to claim 1, wherein said at least one thickening polymer chosen from said cationic amphiphilic polymers is chosen from quaternized cellulose compounds and polyacrylates containing amino side groups.
- 55. The composition according to claim 54, wherein said quaternized cellulose compounds and polyacrylates containing amino side groups comprise from 8 to 30 carbon atoms.
- 56. The composition according to claim 54, wherein said quaternized cellulose compounds are chosen from quaternized celluloses modified with at least one fatty chain chosen from alkyl, arylalkyl and alkylaryl chains comprising at least 8 carbon atoms, and mixtures thereof.
- 57. The composition according to claim 54, wherein said quaternized cellulose compounds are chosen from quaternized hydroxyethylcelluloses modified with at least one fatty chain chosen from alkyl, arylalkyl and alkylaryl chains comprising at least 8 carbon atoms and mixtures thereof.
- 58. The composition according to claim 54, wherein said polyacrylates containing amino side groups are quaternized.
- 59. The composition according to claim 54, wherein said polyacrylates containing amino side groups further comprise hydrophobic groups.

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- 60. The composition according to claim 59, wherein said hydrophobic groups are polyoxyethylenated (20) stearyl alcohol.
- 61. The composition according to claim 54, wherein said cationic amphiphilic polymers are chosen from polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.
- 62. The composition according to claim 1, wherein said least one thickening polymer is present in an amount ranging from 0.01 to 10% by weight relative to the total weight of said composition.
- 63. The composition according to claim 62, wherein said at least one thickening polymer is present in an amount ranging from 0.1 to 5% by weight relative to the total weight of said composition.
- 64. The composition according to claim 1, further comprising water or a mixture of water and at least one organic solvent.
- 65. The composition according to claim 1, wherein said composition has a pH ranging from 2 to 11.
- 66. The composition according to claim 65, wherein said composition has a pH ranging from 5 to 10.
  - 67. The composition according to claim 1, further comprising at least one

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non-cationic direct dye chosen from nitrobenzene dyes, anthraquinone dyes, naphthoquinone dyes, triarylmethane dyes, xanthene dyes and azo dyes.

- 68. The composition according to claim 1, further comprising at least one oxidation base chosen from para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols, ortho-aminophenols and heterocyclic bases.
- 69. The composition according to claim 68, wherein said composition is present in an amount sufficient for oxidation dyeing.
- 70. The composition according to claim 68, wherein said at least one oxidation base is present in an amount ranging from 0.0005 to 12% by weight relative to the total weight of said composition.
- 71. The composition according to claim 70, wherein said at least one oxidation base is present in an amount ranging from 0.005 to 6% by weight relative to the total weight of said composition.
- 72. The composition according to claim 68, further comprising at least one coupler chosen from meta-phenylenediamines, meta-aminophenols, meta-diphenols and heterocyclic couplers.
- 73. The composition according to claim 72, wherein said at least one coupler is present in an amount ranging from 0.0001 to 10% by weight relative to the total weight of said composition.
  - 74. The composition according to claim 73, wherein said at least one

coupler is present in an amount ranging from 0.005 to 5% by weight relative to the total weight of said composition.

- 75. The composition according to claim 68, wherein said composition is present in an amount sufficient for oxidation dyeing.
- 76. The composition according to claim 68, further comprising at least one oxidizing agent.
- 77. The composition according to claim 76, wherein said at least one oxidizing agent is chosen from hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes.
- 78. The composition according to claim 1, wherein said composition is present in an amount sufficient for lightening-direct dyeing.
- 79. The composition according to claim 1, further comprising at least one oxidizing agent.
- 80. The composition according to claim 79, wherein said at least one oxidizing agent is chosen from hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes.
- 81. The composition according to claim 1, wherein said composition is in a form chosen from a shampoo, a cream, and a gel.
  - 82. A ready-to-use composition for dyeing fibers, comprising:
- at least one cationic direct dye chosen from:

$$CH_3$$
 $N=N-CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline \\ & CH_3 \\ \hline \\ & CH_3 \\ \end{array} \qquad CI \qquad (I2)$$

$$H_3C-N+$$
  $CH$   $CH_3$   $CH_3$   $CH_3$ 

$$CH_3 CH = CH - CH_3 CH_3 CI^{-} (I4)$$

$$H_3C-N+$$
  $CH=CH CH_3$   $CI$  (15)

$$HO-H_4C_2-N+$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH$ 
 $CH$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3$$
 $N+$ 
 $N=$ 
 $N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$\begin{array}{c|ccccc}
CH_3 & & & & \\
N+ & & & & \\
N- & & & & \\
N- & & & & \\
N- & & & & \\
CH_3 & & & & \\
CH_3 & & & & \\
\end{array}$$
CI (112)

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN

$$N+$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CI^ CI^ CH_3$ 
 $CI^ CI^ CI^ CH_3$ 
 $CI^ CI^ CI^-$ 

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-$$

$$NH_2$$

$$CI \qquad (I16)$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_2H_5$ 

$$\begin{array}{c}
CH_3 \\
N \\
N \\
CH_3
\end{array}$$

$$CH_3 \\
CH_3$$

$$CH_3 \\
CH_3$$

$$CH_3$$
 $N = N$ 
 $C_2H_5$ 
 $CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 

$$CH_3$$
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c} CH_{3} \\ N \\ N+ \\ CH_{3} \end{array}$$

$$N=N - \begin{array}{c} H \\ CI \\ CH_{2}-CH_{2}-OH \\ \end{array}$$

$$(I21)$$

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$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 & CH_3 \\
N \longrightarrow N = N \longrightarrow N \longrightarrow CH_3 \\
CH_3 & CI \end{array}$$

$$CH_3 & CI \longrightarrow CH_3 \\
CH_3 & CI \longrightarrow CH_3 \longrightarrow CH_3 \\
CH_3 & CI \longrightarrow CH_3 \longrightarrow CH_3 \longrightarrow CH_3 \\
CH_3 & CI \longrightarrow CH_3 \longrightarrow CH_$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CI \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CI \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N- \\
 & NH_2
\end{array}$$
CI (126)

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N = N$ 
 $N = N$ 
 $NH_2$ 
 $CH_3$ 
 $CH_3$ 

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$$N = N - NH_2 \qquad CI \qquad (I32)$$

$$N = N + CH_3$$

$$CH_3$$
  $CI$  (133)

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (136)$$

$$N + CH_3 \qquad CI$$

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$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
S \\
N \\
N \\
CH_3
\end{array}$$

$$\begin{array}{c}
CH_3 \\
CH_3
\end{array}$$

$$CI^{-} \quad (140)$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$C_2H_5$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=$ 
 $N=$ 
 $N$ 
 $CI$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CH_3$ 

$$CH_3$$
 O-CH₃
 $N+$ 
 $N+$ 
 $CH_3$  O-CH₃
 $CI$  (I51)

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$$\begin{array}{c|c} & CH_3 \\ \hline N & CH_3 \\ \hline CH_3 & CI \end{array} \qquad \begin{array}{c} CH_3 \\ CH_3 \end{array}$$

$$N - N +$$
 $N +$ 
 $N = N -$ 
 $N - N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N$   $CH_3$   $CH_3$   $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$N \cdot N + N = N - N \cdot CH_3$$
 $CH_3 \cdot CH_3 \cdot CH_3 \cdot CH_3 \cdot CH_3$ 
 $CH_3 \cdot CH_3 \cdot$ 

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CI$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH_3$ 
 $CH=1$ 
 $CH=1$ 

$$H_3C$$
 $O$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$ 
 $(IIII5)$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

LAW OFFICES

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH^3$ 
 $CI$  (III9)

$$CH_3SO_4 \qquad (III11)$$

$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

LAW OFFICES

$$CH_3$$
 $N=N$ 
 $OCH_3$ 
 $CI^ CH_3$ 
 $CH_3$ 

$$CH=CH-CH_{3}$$
 $CH_{3}COO^{-}$  (III15)

$$H_3C-N+$$
  $CH=CH NH_2$   $CH_3COO$  (III16)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $(III17)$ 
 $CH_3$ 

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

LAW OFFICES

$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N \longrightarrow OH \qquad (IV)_2$$

$$N+N=N - N - N - N - CH_3 - CH_3 - (IV)_3$$

$$N = N - CH_2CH_2OH - CH_2CH_2OH - CH_2CH_2OH$$

$$N+N=N-N+2$$

$$(IV)_5$$

$$N+N=N-N-N-N$$

$$(IV)_6$$

LAW OFFICES

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C \xrightarrow{N+} N = N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c}
CH_{3} \\
N+\\
O^{-}
\end{array}$$

$$\begin{array}{c}
CH_{3} \\
CH_{3}
\end{array}$$

$$(IV)_{10}$$

$$CH_3$$
 $N+N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

LAW OFFICES

$$\begin{array}{c}
CH_3 \\
N+\\
N-\\
\end{array}$$

$$NH_2 \qquad (IV)_{13}$$

$$H_3C \longrightarrow N+N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CI & \\ N+ & N=N \end{array} \longrightarrow \begin{array}{c} N < CH_3 \\ CH_3 \end{array} \qquad (IV)_{16}$$

$$\begin{array}{c|c}
CH_3 \\
N+N=N \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
(IV)_{17}
\end{array}$$

LAW OFFICES

(IV)₁₈

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \end{array} \begin{array}{c} & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$H_3C$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$N+N=N-C_2H_5$$
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \longrightarrow \begin{array}{c} CH_3 \\ CH_3 \end{array} \qquad (IV)_{23}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & O
\end{array}$$
(IV)₂₄

$$N=N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$N=N - CH_2CH_2OH CH_2CH_2OH$$

$$CH_2CH_2OH CH_2OH CH_2OH$$

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$CH_3 CH_3 CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

LAW OFFICES

$$H_{3}C \xrightarrow{N+} N=N \xrightarrow{C} -N \xrightarrow{H} (IV)_{34}$$

$$CH_{3}SO_{4}^{-}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & \text{NHCOCH}_3 \\
 & \text{NHCOCH}_3 \\
 & \text{CH}_3 \\$$

$$N = N - CH_3$$

$$CH_3$$

$$CH_3SO_4$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$N=N$$
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{3}CH_{3}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{3}CH_{3}$ 
 $C_{4}CH_{3}$ 
 $C_{5}CH_{5}CH_{5}$ 

$$\begin{array}{c|c}
CI \\
N=N & CH_3 \\
CH_3 & CH_3SO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 & (IV)_{40} \\
CH_3 & CH_3SO_4
\end{array}$$

LAW OFFICES

$$N = N$$

$$N = N$$

$$C_{2}H_{5}SO_{4}^{-}$$

$$C_{2}H_{5}SO_{4}^{-}$$

$$C_{2}H_{5}SO_{4}^{-}$$

$$C_{3}CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$N=N$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_5$$

$$CH_3SO_4$$

$$CH_5$$

$$\begin{array}{c|c}
 & O \\
 & N + \\
 & O \\
 & O$$

$$\begin{array}{c|c} S & CH_3 \\ \hline CH_3 & CIO_4 \end{array}$$

LAW OFFICES

$$\begin{array}{c|c}
CH_3 \\
N+N=N \\
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline N+ N=N & NH_2 \\ \hline CH_3 & I & NH_2 \end{array}$$
 (IV)₄₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $OH$ 
 $OH$ 

LAW OFFICES

$$\begin{array}{c|c} S & O \\ \hline N+ & N=N \\ \hline CH_3 & CI & OH \end{array}$$
 (IV)₅₁

$$\begin{array}{c|c}
S & O \\
N+ & N=N \\
CIO_4 & OH
\end{array}$$
(IV)₅₂

$$N+ N=N - NH_2$$

$$OCH_3$$
(IV)₅₃

$$\begin{array}{c|c} CH_3 \\ N+ N=N \\ OCH_3 \\ CIO_4 \\ NH_2 \end{array}$$
 (IV)₅₅

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$N+$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & & \\ & & \\ N+ & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$N+N=N-N$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N-OH$$

$$V=N-OH$$

$$V=N-OH$$

$$V=N-OH$$

$$\begin{array}{c|c}
O_2N & CH_3 \\
& CH_3
\end{array}$$

$$(IV)_{63}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3SO_4 \\
 & NO_2
\end{array}$$
(IV)₆₄

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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(IV)₆₉

$$\begin{array}{c|c} & NH_2 \\ \hline N+ N=N - \\ \hline \\ O^- \end{array}$$

$$\begin{array}{c} NH_2 \\ \hline \\ CH_3 \end{array}$$

$$(IV)_{70}$$

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & O$$

$$N = N - NH_2$$

$$| - NH_2 - NH$$

$$\begin{array}{c} N = N \\ \hline \\ N + \\ \hline \\ CH_3 \\ CH_3 \\ \end{array} \\ \begin{array}{c} CH_2CH_2OH \\ \\ CH_2CH_2OH \\ \end{array} \\ \begin{array}{c} (IV)_{73} \\ \end{array}$$

$$N = N \longrightarrow NH_{2}$$

$$CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$\begin{array}{c} CH_{3} \\ N=N \\ NH_{2} \\ CH_{3}SO_{4} \end{array} \qquad (IV)_{75}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $NH_2$ 
 $CH_3$ 
 $NH_2$ 
 $(IV)_{76}$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
\end{array}$$

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$



— at least one thickening polymer chosen from:

nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO) C₁₆-C₁₈ alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.

- 83. A ready-to-use composition for dyeing fibers, comprising:
- at least one cationic direct dye chosen from compounds of formulae (I1),
   (I14), and (IV27) below:

(127)

$$CH_3$$
 $N=N-CH_3$ 
 $CI^ CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CH_3 \\ \hline N+ \\ N=N \end{array} \begin{array}{c|c} CH_2 - CH_2 - CN \\ \hline CH_3 \end{array} \begin{array}{c} CI^- & (127) \end{array}$$

; and

- at least one thickening polymer chosen from: diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO) C₁₆-C₁₈ alcohols, crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether, and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate.
- 84. A process for dyeing fibers, comprising applying a ready-to-use composition for the oxidation dyeing of fibers to said fibers and developing for a

period of time sufficient to achieve the desired coloration, wherein said composition comprises:

- (i) at least one cationic direct dye chosen from compounds of formulae (I), (III), (III) and (IV) below, and
  - (ii) at least one thickening polymer;
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R'_3 \\ N \\ R_2 \end{pmatrix} - \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

 $\ensuremath{\text{R}}_3$  and  $\ensuremath{\text{R}}'_3$  , which may be identical or different, are chosen from a hydrogen

atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

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and

in which:

 $R_4$  is chosen from  $C_1\text{-}C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $R_{\scriptscriptstyle 5}$  is chosen from  $C_{\scriptscriptstyle 1}\text{-}C_{\scriptscriptstyle 4}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

(b) wherein said compounds of formula (II) are chosen from compounds of

formula:

$$B-N=N- \begin{array}{c} R_8 \\ \hline \\ X \end{array} \begin{array}{c} R_7 \\ \hline \\ R_7 \end{array} \tag{II)}$$

in which:

 $R_6$  is chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X⁻ is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R$ 

in which:

 $R_{\rm 10}$  is chosen from  $C_{\rm 1}\text{-}C_{\rm 4}$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

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$$E-D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$X - R_{16} - R_{16}$$
(III)

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

R₁₅ is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH

group and m = 0,

X⁻ is chosen from anions,

E is chosen from structures  $\mathsf{E_1}$  to  $\mathsf{E_8}$  below:

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and

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

wherein when m=0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

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G is chosen from structures  $G_1$  to  $G_3$  below:

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

R₁₉ is chosen from C₁-C₄ radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  ${}^{+}R_{22}(X^{-})_r$  radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

P is chosen from a -CH radical, -C(C₁-C₄ alkyl) radicals and -N  $^+$ R₂₂(X⁻), radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X⁻ is chosen from anions;

wherein if R₂₂ is O is zero;

wherein if K or P or  $M > C_1-C_4-N^+$ -alkyl X⁻, either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is  ${}^{\downarrow}N^{\uparrow}R_{22}(X^{\cdot})_r$ , M and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

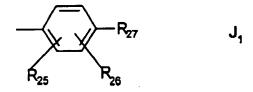
wherein if M denotes  $-N^+R_{22}(X^-)_r$ , K and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if P is  $-N^+R_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals; J is chosen from:

(1) radicals chosen from structure J₁ below:



in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO₂ radical, -NHR₂₈ radicals, -NR₂₉R₃₀ radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least

one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and

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- (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.
- 85. The process according to claim 84, further comprising washing said fibers with shampoo, rinsing said fibers and drying said fibers.
- A process for dyeing fibers, comprising applying a ready-to-use composition for the oxidation dyeing of fibers to said fibers and developing for a period of time sufficient to achieve the desired coloration, wherein said composition comprises: at least one Cationic direct dye Chosen from

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$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

$$H_3C-N+$$
  $CH$   $CH_3$   $CH_3$   $CH_3$ 

$$CH = CH - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-N+$$
  $CH=CH C_2H_4CN$   $C_1$  (15)

$$HO-H_4C_2-N+$$
 $CH=CH$ 
 $CH_3$ 
 $CH_3$ 
 $CI$ 
 $(I6)$ 

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$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI^{-}$ 
 $CI^{-}$ 
 $CH_3$ 

$$CH_3 \qquad CH_3 \qquad CH_3 \qquad CI \qquad (I8)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$N \xrightarrow{CH_3} N = N \xrightarrow{N+} NH_2 \qquad CI \qquad (110)$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N NH_2$ 
 $CH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
C_2H_5
\end{array}$$

$$C_2H_5$$

$$CH_3$$

$$CH_$$

$$\begin{array}{c} CH_{3} \\ N+ \\ N=N \end{array}$$

$$N=N$$

$$C_{2}H_{4}-CN$$

$$C_{2}H_{4}-CN$$

$$C_{2}H_{4}-CN$$

$$CH_{3}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N = N \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI^- \\
CI^-
\end{array}$$
(I15)

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_2H_5$ 

$$\begin{array}{c}
CH_3 \\
N \\
CH_3
\end{array}$$

$$CH_3 \\
CH_3$$

$$CH_3 \\
CH_3$$

$$\begin{array}{c|c}
CH_3 \\
N \\
N+ \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
C_2H_5 \\
C_2H_5
\end{array}$$
(I19)

$$CH_3$$
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $N=N$ 
 $CH_2$ 
 $CH_2$ - $CH_2$ -OH
 $CH_3$ 

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$$CH_3$$
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$N \longrightarrow N + N = N \longrightarrow N \longrightarrow CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (124)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (124)$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
\end{array}$$

$$NH_2 \qquad CI \qquad (126)$$

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$H_3C-N+$$
  $N=N CH_3$   $CH_3$  (130)

$$\begin{array}{c|c}
CH_3 \\
N+ \\
CH_3
\end{array}$$

$$NH \longrightarrow NH_2 \qquad CI \qquad (I31)$$

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$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$CH_3$$
  $CI$  (133)

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (136)$$

$$CH_3 \qquad CI$$

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$$H_3C-O$$
 $N=N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$\begin{array}{c|c}
S \\
N \\
N \\
CH_3
\end{array}$$

$$\begin{array}{c}
CH_3 \\
CH_3
\end{array}$$

$$CI \cdot (140)$$

$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$N+$$
 $N=$ 
 $N$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=$ 
 $N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$H_2N$$
 $N \cdot N + N + N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & S \\
 & CH = N - N \\
 & CH_3
\end{array}$$

$$CI \cdot (III1)$$

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$$H_3C$$
 $N$ 
 $CH_3$ 
 $CH=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C$$
 $O$ 
 $CH=N-N$ 
 $CH_3$ 
 $C$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$ 
 $(IIII5)$ 

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3SO_4$ 
(III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$   $CI$   $CI$  (III9)

$$CH = N - N - CH_3 CH_3$$

$$CH_3 CO_4 CH_3 CH_3$$

$$CH_3 SO_4 CH_3 CH_3$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$CH_3$$
 $N = N$ 
 $OCH_3$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CH_3$ 

$$CH=CH$$
 $CH_3$ 
 $CH_3COO$ 
 $CH_3COO$ 
 $CH_3COO$ 
 $CH_3COO$ 

$$H_3C-N+$$
 CH=CH- $NH_2$  CH₃COO (III16)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III17)

$$CI \longrightarrow N = N \longrightarrow CI \qquad (III18)$$

$$H_3C \longrightarrow N + \bigcup_{CH_3}$$

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$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N \longrightarrow OH$$

$$V = N$$

$$N+N=N \longrightarrow N+COCH_3 CH_3 CH_3 (IV)_3$$

$$N+N=N-CH_2CH_2OH CH_2CH_2OH (IV)_4$$

$$N = N - NH_2 \qquad (IV)_5$$

$$N+N=N-N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C \xrightarrow{N+} N = N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$
(IV)₁₀

$$N+N=N$$
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ N=N \end{array} \longrightarrow \begin{array}{c} CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \end{array} \qquad (IV)_{12}$$

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
\hline
\end{array}$$

$$\begin{array}{c|c}
-NH_2 \\
\end{array}$$
(IV)₁₃

$$H_3C$$
 $N+N=N$ 
 $N=N$ 
 $N+1$ 
 $N=N$ 
 $N+1$ 
 $N$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
\hline
CH_3 \\
CH_3
\end{array}$$
(IV)₁₇

$$\begin{array}{c|c} CH_3 & NHCOCH_3 \\ \hline N+ & N=N \\ \hline \end{array} \begin{array}{c} CH_3 \\ CH_3 \end{array} \qquad (IV)_{18}$$

$$N+N=N-C$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c} H_3C \\ \hline N+ N=N \\ \hline \end{array} - N < \begin{array}{c} CH_3 \\ CH_3 \end{array}$$
 (IV)₂₀

$$CH_3$$
 $N+N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline \\ O^{-} & & \\ \end{array}$$

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} - & CH_3 \\ \hline CH_3 & CH_3 \end{array}$$

$$\begin{array}{c|c} CH_3 \\ N+N=N \end{array} \longrightarrow \begin{array}{c|c} H \\ O \end{array}$$
 (IV)₂₄

$$N=N \xrightarrow{\text{CH}_3} \text{CH}_3$$

$$\downarrow^{\text{N+}}$$

$$N=N - CH_2CH_2OH CH_2CH_2OH CH_2CH_2OH$$

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$\begin{array}{c|c} & & & \\ & N+ & N=N & \\ & & CH_3 & \\ & & CH_3SO_4^- & \end{array}$$

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & & \\ & N+& N=N & & & \\ & & & \\ & CH_3 & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CI \\
 & CH_3 \\
 & CH_3 \\
 & CH_3SO_4
\end{array}$$
(IV)₃₃

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $N=N$ 
 $N=N$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & \text{NHCOCH}_3 \\ & & \\ \downarrow \\ \text{CH}_3 \\ & \text{CH}_3 \\ \text{CH}_3 \\ \text{CH}_3 \\ \end{array} \qquad \text{(IV)}_{36}$$

$$N=N - CH_3$$

$$CH_3 CH_3 SO_4$$

$$CH_3$$

$$CH_3 SO_4$$

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$$\begin{array}{c|c}
CI \\
N=N \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

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$$N = N \xrightarrow{N+COCH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c} H_3C \\ N=N \\ N+ \\ C_4H_9 \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \\ CH_3 \end{array}$$

$$(IV)_{43}$$

$$\begin{array}{c|c} & CH_3 \\ \hline N+N=N-N \\ \hline OCH_3 \\ CH_3SO_4 \\ \end{array}$$

$$\begin{array}{c|c} CH_3 \\ \hline C_6H_5 \\ \end{array}$$

$$(IV)_{44}$$

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
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$$\begin{array}{c}
 & O \\
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$$\begin{array}{c}
 & O \\
 & N \\
 & O
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$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline CH_3 & CIO_4 \end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+N=N \\
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline N+ N=N & NH_2 \\ \hline CH_3 & I & NH_2 \end{array}$$
 (IV)₄₉

$$H_3C \longrightarrow N+ N = N \longrightarrow NH$$

$$CIO_4 \longrightarrow OH$$

$$(IV)_{50}$$

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$$\begin{array}{c|c}
 & S \\
 & N+ \\
 & CI \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & O \\
 & NH \\
 & OH
\end{array}$$

$$\begin{array}{c}
 & (IV)_{51} \\
 & OH
\end{array}$$

$$N = N - NH_2$$

$$OCH_3$$
(IV)₅₃

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$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$N+N=N$$
 $CH_3$ 
 $OH$ 
 $CH_3$ 
 $CH_3$ 

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$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

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(IV)₆₀

CH₃ OH.

NO₂

(IV)₆₁

(IV)₆₂

(IV)₆₃

(IV)₆₄ CH₃SO₄

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline \\ CH_3 \\ \hline \\ CH_3 \\ \hline \\ CH_3SO_4 \\ \end{array} \qquad (IV)_{67}$$

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$$\begin{array}{c|c} & NH_2 \\ \hline N+ & N=N \\ \hline & \\ CH_3 \end{array}$$
 (IV)₇₀

$$\begin{array}{c|c}
 & O \\
 & N \\
 & O \\
 & CH_3
\end{array}$$
(IV)₇₁

$$\begin{array}{c|c} & CH_2CH_2OH \\ \hline & CH_2CH_2OH \\ \hline & CH_2CH_2OH \\ \hline & CH_3SO_4 \end{array}$$

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$$N = N \longrightarrow NH_{2}$$

$$\downarrow N+ \qquad NH_{2}$$

$$\downarrow CH_{3} \qquad CH_{3}SO_{4} \qquad (IV)_{74}$$

$$N=N \longrightarrow NH_{2}$$

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$(IV)_{75}$$

$$CH_3$$
 $N+N=N$ 
 $N+N=N$ 
 $N+1$ 
 $N+1$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$
(IV)₇₇

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— at least one thickening polymer is chosen from:

nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO) C₁₆-C₁₈ alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.

87. The process according to claim 86, further comprising washing said fibers with shampoo, rinsing said fibers and drying said fibers.



A process for dyeing fibers, comprising applying a ready-to-use



composition for the oxidation dyeing of fibers to said fibers and developing for a period of time sufficient to achieve the desired coloration, wherein said composition comprises:

at least one cationic direct dye chosen from compounds of formulae (I1),
 (I14), and (IV27) below:

; and

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- at least one thickening polymer chosen from: diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)  $C_{16}$ - $C_{18}$  alcohols, crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether, and crosspolymers of acrylic acid/ $C_{10}$ - $C_{30}$  alkyl acrylate.
- 89. The process according to claim 88, further comprising washing said fibers with shampoo, rinsing said fibers and drying said fibers.
  - 90. A process for dyeing fibers, comprising:
    separately storing a first composition,
    separately storing a second composition,
    thereafter mixing said first and second compositions,
    applying said mixture to said fibers, and
- wherein said first composition comprises at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), (III) and (IV) below,

developing for a period of time sufficient to achieve the desired coloration,

- (i) at least one cationic direct dye chosen from compounds of formulae (I), (III), (III) and (IV) below, and
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R'_{3} \\ \\ \\ X \end{pmatrix} - N \begin{pmatrix} R_{1} \\ \\ \\ R_{2} \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

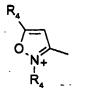
 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

$$\bigvee_{\substack{N\\R_4}}^{N^+} \stackrel{N^+}{\underset{R_4}{\overset{-}{\longrightarrow}}}$$

$$R_5$$
 $N=N+$ 



A₁₀

A₁₁

A₁₂

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and

in which:

 $R_4$  is chosen from  $C_1\text{-}C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $\ensuremath{R_{\scriptscriptstyle{5}}}$  is chosen from  $\ensuremath{C_{\scriptscriptstyle{1}}\text{-}C_{\scriptscriptstyle{4}}}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

(b) wherein said compounds of formula (II) are chosen from compounds of

formula:

$$B-N=N$$

$$X$$

$$R_{8}$$

$$R_{7}$$

$$R_{7}$$

$$R_{9}$$

$$R_{1}$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X⁻ is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R$ 

in which:

 $\ensuremath{R_{10}}$  is chosen from  $\ensuremath{C_1\text{-}C_4}$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:



$$E-D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$X - R_{16} - R_{16}$$
(III)

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

 $\ensuremath{R_{\text{15}}}$  is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH

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group and m = 0,

X⁻ is chosen from anions,

E is chosen from structures  $\mathsf{E_1}$  to  $\mathsf{E_8}$  below:

E1

E7

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and

in which R' is chosen from C₁-C₄ alkyl radicals;

wherein when m = 0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

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G is chosen from structures  $G_1$  to  $G_3$  below:

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

R₁₉ is chosen from C₁-C₄ radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X⁻ is chosen from anions;

wherein if R₂₂ is O⁻, r is zero;

wherein if K or P or M is  $C_4 - N^+$ -alkyl X, either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;



wherein if K is -N  $+P_{22}(X)_r$ , M and P are the same and are chosen from a -CH radical and  $+C(C_1-C_4)$  alkyl) radicals;

wherein if M denotes  $-N^{\dagger}R_{22}(X^{\circ})_r$ , K and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

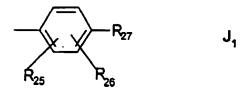
if P is  $-N^+R_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C( $C_1$ - $C_4$  alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom.

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure  $J_1$  below:



in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least

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one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $\rm R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}\rm R_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals, an amino radical, a phenyl radical, and
- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one thickening polymer is chosen from polymers
   comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;

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from:



# Attorney Docket No. 05725.0435-00000

- (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
- (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.
- 91) A process for dyeing fibers, comprising:
  separately storing a first composition,
  separately storing a second composition,
  thereafter mixing said first and second compositions,
  applying said mixture to said fibers, and
  developing for a period of time sufficient to achieve the desired coloration,
  wherein said first composition comprises at least one cationic direct dye chosen

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$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=CH C_2H_4CN$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 
 $C_3$ 
 $C_4$ 
 $C_5$ 
 $C_4$ 
 $C_5$ 
 $C_5$ 
 $C_6$ 
 $C_7$ 
 $C_8$ 
 $C_8$ 

$$HO-H_4C_2-N+$$
 $CH=CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH$ 
 $CH$ 
 $CH_3$ 
 $CI$ 
 $(I7)$ 

ゞ

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (i9)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (i9)$$

$$\begin{array}{c} CH_3 \\ N \longrightarrow N = N \longrightarrow NH_2 \\ CH_3 \end{array}$$
 (I10)

$$CH_3$$
 $N+$ 
 $N=N OCH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
C_2H_5
\end{array}$$

$$C_2H_5$$

$$C_2H_5$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N+ \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI \\
CH_3
\end{array}$$
(I14)

$$\begin{array}{c|c}
CH_3 \\
N+\\
N=N-\\
CH_3
\end{array}$$

$$CI \quad (I15)$$

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-$$

$$N=N-$$

$$CH_3 \\
CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $C_2H_5$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $OH$ 
 $CH_3$ 

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$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$N$$
 $N+$ 
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $C$ 

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
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 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
\end{array}$$

$$NH_2 \qquad CI^{-} \qquad (126)$$

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$CH_3$$
 $N=N=N-NH_2$ 
 $CI^ CH_3$ 
 $CH_3$ 

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$$N = N - NH_2 \qquad CI \qquad (I32)$$

$$N = N + CH_3$$

$$N+$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N=N$   $CH_3$   $C$ 

$$H_3C-O N=N+$$
 $N=N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI^- \qquad (I36)$$

$$CH_3 \qquad CI$$

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$$H_3C-O$$
 $N=N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $O$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
S \\
N - N = N
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$CI \cdot (140)$$

$$CH_3$$

$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N \\
N+ \\
CH_3
\end{array}$$

$$NH CI (143)$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

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$$S$$
 $N+$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $C$ 

$$C_2H_5$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
CH_3
\end{array}$$
CI (150)

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

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$$N^{N+}$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N CH_3$   $CI$   $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$H_2N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH = N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CI$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=N$ 
 $C$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III5)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3SO_4$ 
(III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$   $CI$  (III9)

$$\begin{array}{c|c} & CH_3SO_4 & (III10) \\ \hline & CH_3 & \end{array}$$

$$CH=N-N$$

$$CH_3SO_4$$

$$CH_3$$

$$CH_3$$

$$CH = N - N - CH_3 CH_3$$

$$CH_3 CH_3$$

$$CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$H_3C-N_7$$
  $CH=CH-NH_2$   $CH_3COO$  (III16)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III17)

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

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$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

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$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c}
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$$N+N=N-N+COCH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N = N - CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N-N+2$$

$$(IV)_5$$

$$N+N=N-N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$N+N=N-N-C_2H_5$$
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c}
CH_3 \\
N+ \\
N=N \\
- \\
CH_2CH_2OH \\
CH_2CH_2OH
\end{array}$$
(IV)₁₂

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$$\begin{array}{c}
CH_3 \\
N+\\
N=N
\end{array}$$

$$NH_2 \qquad (IV)_{13}$$

$$H_3C \longrightarrow N+N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline & CH_3 & \\ CH_3 & \\ \end{array}$$
 (IV)₁₆

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FARABOW, GARRETT,
& DUNNER, L. L. P.

6 DUNNER, L. L.P. 1300 I STREET, N. W. WASHINGTON, DC 20005 202-408-4000

$$\begin{array}{c|c} CH_3 & NHCOCH_3 \\ \hline N+ & N=N \\ \hline \\ CH_3 & CH_3 \\ \hline \end{array} \qquad \text{(IV)}_{18}$$

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \end{array} \begin{array}{c} & & \\ & & \\ & & \\ CH_3 \end{array} \hspace{1cm} \text{(IV)}_{19}$$

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline \\ O^- & & \\ \end{array} \qquad \begin{array}{c} C_2H_5 \\ \hline \\ C_2H_5 \end{array} \qquad \qquad (IV)_{22}$$

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \longrightarrow \begin{array}{c} CH_3 \\ CH_3 \end{array}$$
 (IV)₂₃

LAW OFFICES

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
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$$N=N - CH_3 CH_3 CH_3$$

$$N=N \xrightarrow{\text{CH}_2\text{CH}_2\text{OH}} \text{CH}_2\text{CH}_2\text{OH}$$

$$CH_2\text{CH}_2\text{OH}$$

$$CH_2\text{CH}_2\text{OH}$$

$$\begin{array}{c|c} & CH_3 \\ \hline CH_3 \\ CH_3SO_4^- \end{array}$$

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LAW OFFICES

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ CH_{3} \\ CH_{3} \\ CH_{3}SO_{4}^{-} \end{array}$$

$$\begin{array}{c} CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \\ \end{array}$$

$$\begin{array}{c} (IV)_{30} \\ \end{array}$$

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\$$

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$$CH_{3}$$

$$CH_{3}SO_{4}$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & \text{NHCOCH}_3 \\ & & \\ \text{CH}_3 & \\ & \text{CH}_3 \text{CH}_3 \end{array}$$

$$\begin{array}{c|c} & \text{CH}_3 \\ & \text{CH}_3 \end{array}$$

$$N=N - CH_3$$

$$CH_3 CH_3 CH_3$$

$$CH_3 CH_3$$

$$CH_3 CH_3 CH_3$$

$$N=N - CH_3$$

$$CH_3$$

$$CH_3SO_4$$

$$CH_3$$

$$CH_3$$

$$N=N$$
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{3}CH_{3}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{3}CH_{3}$ 
 $C_{4}CH_{3}$ 
 $C_{5}CH_{5}CH_{5}$ 

$$\begin{array}{c|c}
CI \\
N=N & CH_3 \\
CH_3 & CH_3SO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 & (IV)_{40} \\
CH_3 & CH_3SO_4
\end{array}$$

$$N=N \xrightarrow{N+COCH_3} N+C_2H_5SO_4$$

$$C_2H_5$$

$$C_2H_5$$

$$C_2H_5$$

$$C_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c} & CH_3 \\ \hline N+ N=N & N \\ \hline OCH_3 & O \\ \hline CH_3SO_4 & C_6H_5 \end{array}$$

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$$\begin{array}{c|c} S & CH_3 \\ \hline \\ CH_3 & CIO_4 \end{array}$$

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L. L. P.
1300 I STREET, N. W.
WASHINGTON, DC 20005

202-408-4000

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
CH_3 \\
CIO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
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\end{array}$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $(IV)_{50}$ 

$$\begin{array}{c|c}
 & S \\
 & N+ \\
 & N=N \\
 & CI \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & O \\
 & NH \\
 & OH
\end{array}$$

$$\begin{array}{c|c}
 & (IV)_{51} \\
 & OH
\end{array}$$

$$N+N=N-N+2$$

$$OCH_3$$

$$(IV)_{53}$$

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$$\begin{array}{c|c} CH_3 \\ N+ N=N \\ OCH_3 \\ CIO_4 \\ NH_2 \end{array}$$
 (IV)₅₅

$$N+N=N$$
 $N+N=N$ 
 $N+N=$ 

$$N+N=N$$
 $CH_3$ 
 $O-CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & & & \\ & N+ & N=N \\ & & \\ & O \end{array}$$
 
$$\begin{array}{c} & & \\ & O \end{array}$$
 
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$$N+N=N$$
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 $CH_3$ 
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$$CH_3$$
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$$\begin{array}{c|c} & & & \\ & N+ & \\ & N- & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

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$$O_2N$$
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LAW OFFICES

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$$N+N=N-N+2$$

$$CH_3$$

$$(IV)_{70}$$

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 & N \\
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\end{array}$$

$$\begin{array}{c}
 & O \\
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$$\begin{array}{c}
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$$N = N - NH_2$$

$$|V|_{1-}$$

$$|V|_{72}$$

$$N=N$$
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3CH_3OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$N = N \longrightarrow NH_{2}$$

$$\downarrow N+ \qquad NH_{2}$$

$$\downarrow CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N=N \xrightarrow{\text{CH}_3} NH_2$$

$$\downarrow N+ \\ \downarrow CH_3 SO_4$$

$$\downarrow NH_2$$

$$\downarrow (IV)_{75}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $NH_2$ 
 $CH_3$ 
 $O NH_2$ 
 $O NH_2$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$
(IV)₇₇

LAW OFFICES

- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one oxidizing agent is chosen from:
   hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes;
- wherein said at least one thickening polymer is chosen from: nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO) C₁₆-C₁₈ alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.

92. A process for dyeing fibers, comprising:

separately storing a first composition,

separately storing a second composition,

thereafter mixing said first and second compositions,

applying said mixture to said fibers, and

developing for a period of time sufficient to achieve the desired coloration,

- wherein said first composition comprises at least one cationic direct dye and at least one thickening polymer,
- (i) at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), (III') and (IV) below,
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R'_3 \\ N \\ R_2 \end{pmatrix} \qquad (I)$$

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a

carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

LAW OFFICES

and

in which:

 $R_4$  is chosen from  $C_1$ - $C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

R₅ is chosen from C₁-C₄ alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

$$B-N=N- \begin{array}{c} R_8 \\ \hline \\ X \end{array} \begin{array}{c} R_7 \\ \hline \\ R_7 \end{array} \tag{II)}$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X⁻ is chosen from anions,

B is chosen from structures  $B_1$  to  $B_6$  below:

$$R_{10}$$
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 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{11}$ 
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 $R_{12}$ 
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 $R_{15}$ 
 $R_{15}$ 

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in which:

 $\ensuremath{R_{10}}$  is chosen from  $\ensuremath{C_1\text{-}C_4}$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

$$E-D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$(III)$$

$$E-D_{1} = D_{2}$$

$$X - R_{17} - R_{16}$$

$$(III')$$

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

R₁₅ is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

X⁻ is chosen from anions,

E is chosen from structures  $E_1$  to  $E_8$  below:

and

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in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

wherein when m=0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_1$  to  $G_3$  below:

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

 $R_{19}$  is chosen from  $C_1$ - $C_4$  radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C(C₁-C₄ alkyl) radicals and -N +R₂₂(X-), radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an O anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X⁻ is chosen from anions;

wherein if  $R_{22}$  is  $\nabla$ , r is zero;

wherein if K or P or M is  $C_1$ - $C_4$ -N⁺-alkyl X⁻, either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is -N  $^{+}$ R₂₂(Xt), M and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

wherein if M denotes  $N^{+}R_{22}(X^{-})_{r}$ , K and P are the same and are chosen from a -CH radical and -C( $C_1$ - $C_4$  alkyl) radicals;

if P is -N $^+R_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if Z is a sulphur atom with  $R_{20}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $\mbox{R}_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}\mbox{R}_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals, an amino radical, a phenyl radical, and
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - wherein said second composition comprises at least one oxidizing agent.
    - 93. A process for dyeing fibers, comprising: separately storing a first composition, separately storing a second composition,



thereafter mixing said first and second compositions,
applying said mixture to said fibers, and
developing for a period of time sufficient to achieve the desired coloration,

- wherein said first composition comprises at least one cationic direct dye and at least one thickening polymer,
  - wherein said at least one cationic direct dye is chosen from:

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$$CH_3$$
 $N = N - CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
  $CH$   $CH$   $CH_3$   $CI$   $(I3)$ 

$$H_3C-N+$$
  $CH$   $CH$   $CH_3$   $CI$   $CI$   $C_2H_4CN$ 

$$HO-H_4C_2-N+$$
 $CH=CH-CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH$ 
 $CH$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$N = N - NH_2 \qquad CI \qquad (110)$$

$$CH_3$$

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
C_2H_5 \\
C_2H_5
\end{array}$$

$$\begin{array}{c|c}
C_1 \\
C_2H_5
\end{array}$$

$$\begin{array}{c|c}
C_1 \\
C_2H_5
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI \\
CI
\end{array}$$

$$\begin{array}{c|c}
CI \\
CI
\end{array}$$

$$\begin{array}{c|c}
CI \\
CI
\end{array}$$

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$$\begin{array}{c}
CH_3 \\
N \\
N+\\
CH_3
\end{array}$$

$$CH_3 \\
CH_3$$

$$CH_3$$

$$\begin{array}{c|c}
CH_3 \\
N \\
N+ \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
N \\
C_2H_5
\end{array}$$
CI (119)

$$CH_3$$
 $N = N$ 
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

$$\begin{array}{c} CH_{3} \\ N \\ N \\ N \\ CH_{2} \\ CH_{2} \\ CH_{2} \\ CH_{2} \\ CH_{2} \\ CH_{2} \\ CH_{3} \\ \end{array}$$

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$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline CH_3 \\ \hline CH_3 \\ \end{array} CH_3 \end{array} \qquad CI \qquad (I24)$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
\end{array}$$

$$NH_2 \qquad CI \qquad (126)$$

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
NH_2 \\
CH_3
\end{array}$$
CI (131)

$$N = N - NH_2 \qquad CI^- \qquad (I32)$$

$$N + CH_3$$

$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N=N$   $CH_3$   $C$ 

$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-O$$
 $N=N+$ 
 $N=N$ 
 $N=N$ 
 $O-CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $O$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
S \\
N - N = N
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

$$N = N - N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$N \rightarrow N = N \rightarrow CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
CH_3
\end{array}$$

$$N=N- \\
N- \\
N+ \\
CH_3$$
(143)

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
\hline
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c|c}
 & C_2H_5 \\
\hline
 & N+ \\
 & N=N- \\
\hline
 & N+ \\
\hline
 &$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

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$$\begin{array}{c|c} & CH_3 \\ \hline N & CH_3 \\ \hline CH_3 \\ \hline CH_3 \\ \end{array}$$

$$N - N + N = N - N - N - CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N+$$
 $N=$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N$   $CH_3$   $CI$   $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3$ 

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$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

and

$$N \cdot N + N + N = N - N \cdot CH_3$$
 $CH_3 \cdot CH_3 \cdot CH_3$ 

$$\begin{array}{c|c}
 & S \\
 & CH = N - N - \\
 & CH_3
\end{array}$$
CI (III1)

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=$ 
 $CH_3$ 
 $CH=$ 
 $CH=$ 

$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=N$ 
 $CH=N$ 

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $CI$ 
 $(III5)$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$

$$CH=N-N-$$

$$CH_3$$

$$CI$$

$$CI$$

$$CI$$

$$(III9)$$

$$CH=N-N$$
 $CH_3SO_4$  (III11)

$$CH = N - N - CH_3 - CH_3 - CH_3 + CH_3$$

$$CH_3 - CH_3 - C$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$H_3C-N+$$
  $CH=CH NH_2$   $CH_3COO$  (III16)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III17)

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

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$$N=N$$
 $CH_3$ 
 $N+$ 
 $CH_3$ 
 $N+$ 

$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$
(IV)₁

$$N = N \longrightarrow OH$$

$$V = N \longrightarrow OH$$

$$N+N=N \longrightarrow N+COCH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N-CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N-N+2$$

$$|V|_{0}$$

$$|V|_{0}$$

$$|V|_{0}$$

$$N+N=N-N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C \xrightarrow{N+} N = N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N-C_2H_5$$
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c}
CH_3 \\
N+N=N \\
\hline
O-N \\
CH_2CH_2OH \\
CH_2CH_2OH
\end{array}$$
(IV)₁₂

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$$\begin{array}{c}
CH_3 \\
N+\\
N=N
\end{array}$$

$$\begin{array}{c}
NH_2 \\
O
\end{array}$$

$$(IV)_{13}$$

$$H_3C \longrightarrow N+ N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
\hline
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

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$$\begin{array}{c|c} CH_3 & NHCOCH_3 \\ \hline N+ N=N & CH_3 \\ \hline CH_3 & CH_3 \end{array}$$

$$\begin{array}{c|c} & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} & CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₁₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$CI \longrightarrow N = N \longrightarrow -N < C_2H_5$$

$$C_2H_5 \longrightarrow C_2H_5$$

$$C_2H_5 \longrightarrow -N < C_2H_5$$

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₂₃

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
\hline
 & O
\end{array}$$
(IV)₂₄

$$N=N - CH_3$$

$$CH_3$$

$$CH_3$$

$$O$$

$$N=N \xrightarrow{\text{CH}_2\text{CH}_2\text{OH}} \text{(IV)}_{26}$$

$$N+1 = N \xrightarrow{\text{CH}_2\text{CH}_2\text{OH}} \text{(IV)}_{26}$$

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$$\begin{array}{c} \begin{array}{c} \\ N+\\ CH_3 \end{array} \\ CH_3SO_4 \end{array}$$

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}SO_{4}^{-}$$

$$(IV)_{32}$$

$$\begin{array}{c|c} CI \\ \hline N+ \\ CH_3 \\ \hline CH_3SO_4^- \end{array}$$

$$\begin{array}{c|c} CH_3 \\ \hline CH_3 \\ \end{array}$$

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$$H_{3}C \xrightarrow{N+} N = N \xrightarrow{C} - N \xrightarrow{H} (IV)_{34}$$

$$CH_{3}SO_{4}^{-}$$

$$H_{\bar{3}}C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ &$$

$$N=N - CH_3 CH_3 CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3 CH_3 CH_3 CH_3$$

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$$N=N$$
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{2}H_{5}SO_{4}^{-}$ 
 $C_{3}CH_{3}$ 
 $C_{4}CH_{3}$ 
 $C_{5}CH_{5}CO_{4}^{-}$ 
 $C_{5}CH_{5}CO_{4}^{-}$ 

$$\begin{array}{c|c}
CI \\
N=N & CH_3 \\
CH_3 & CH_3SO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

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$$N=N \xrightarrow{N+COCH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c} H_3C \\ \hline \\ N=N \\ \hline \\ C_4H_9 \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \\ \end{array}$$

$$(IV)_{43}$$

$$\begin{array}{c|c} & CH_3 \\ \hline N+N=N & N \\ \hline OCH_3 & O \\ \hline CH_3SO_4 & C_6H_5 \end{array}$$

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$$\begin{array}{c|c} S & CH_3 \\ \hline CH_3 & CIO_4 \end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+N=N \\
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline \\ N+ & N=N \\ \hline \\ CH_3 & 1 & NH_2 \end{array}$$
 (IV)₄₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $(IV)_{50}$ 

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$$\begin{array}{c|c}
 & S \\
 & N+N=N \\
 & CI^* \\
 & OH
\end{array}$$
(IV)₅₁

$$N+N=N-N+2$$

$$OCH_3$$
(IV)₅₃

$$N+N=N$$
 OH  $(IV)_{54}$ 

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$$N+N=N$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

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$$\begin{array}{c|c} & CH_3 \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$N+$$
 $N=N$ 
 $N=N$ 

$$N+N=N \longrightarrow OH$$

$$(IV)_{62}$$

$$\begin{array}{c|c}
O_2N & CH_3 \\
\downarrow - & CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 & (IV)_{63}
\end{array}$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline N+ & CH_3 \\ \hline CH_3 & CH_3SO_4 \end{array}$$

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$$\begin{array}{c|c}
\hline
 N+ & N=N & O \\
\hline
 OCH_3 & HO & NH \\
\hline
 CH_3SO_4
\end{array}$$
(IV)₆₉

$$\begin{array}{c|c} & NH_2 \\ \hline N+ & N=N \\ \hline \\ O^- & CH_3 \end{array}$$
 (IV)₇₀

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 &$$

$$N = N - NH_2$$

$$(IV)_{72}$$

$$N=N$$
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3CH_3OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

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$$N=N \longrightarrow NH_{2}$$

$$CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N=N \xrightarrow{\text{CH}_3} \text{NH}_2$$

$$CH_3 \text{CH}_3 \text{SO}_4^{-1}$$

$$(IV)_{75}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $NH_2$ 
 $CH_3$ 
 $NH_2$ 
 $(IV)_{76}$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$

$$(IV)_{77}$$

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- wherein said at least one thickening polymer is chosen from:

nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)  $C_{16}$ - $C_{18}$  alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride; and

- wherein said second composition comprises at least one oxidizing agent chosen
   from: hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes.
  - 94. A process for dyeing fibers, comprising: separately storing a first composition, separately storing a second composition,

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thereafter mixing said first and second compositions,

applying said mixture to said fibers, and

developing for a period of time sufficient to achieve the desired coloration,

- wherein said first composition comprises at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), (III') and (IV) below and at least one oxidation base;
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R_1 \\ R_2 \end{pmatrix} - N \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

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 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

and

in which:

 $R_4$  is chosen from  $C_1$ - $C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $R_{\scriptscriptstyle 5}$  is chosen from  $C_{\scriptscriptstyle 1}\text{-}C_{\scriptscriptstyle 4}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

$$B-N=N- \begin{array}{c} R_8 \\ \hline \\ X \end{array} \qquad \begin{array}{c} R_8 \\ \hline \\ R_7 \end{array} \qquad (II)$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{11}$ 
 $R_{12}$ 
 $R_{12}$ 
 $R_{13}$ 
 $R_{14}$ 
 $R_{15}$ 
 $R$ 

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in which:

R₁₀ is chosen from C₁-C₄ alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

$$E-D_1 = D_2 - (N)_m$$
 $R_{13}$ 
 $R_{15}$ 
 $R_{15}$ 
 $R_{16}$ 
 $R_{16}$ 
 $R_{16}$ 

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

R₁₅ is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

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X⁻ is chosen from anions,

E is chosen from structures  $E_1$  to  $E_8$  below:

and

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in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

wherein when m=0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from C₁-C₄ alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_1$  to  $G_3$  below:

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

 $R_{19}$  is chosen from  $C_1\text{-}C_4$  radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

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together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^{+}R_{22}(X^{-})_r$  radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)$ , radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X is chosen from anions;

wherein if R₂₂ is O',\r is zero;

wherein if K or P or  $N_1$  is  $C_1$ - $C_4$  -N  $^+$ -alkyl  $X^-$ , either  $R_{23}$  or  $R_{24}$  is not a hydrogen

atom;

wherein if K is -N  $^{+}R_{22}(X^{-})$ , M and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals

wherein if M denotes  $-N_1^+R_{22}(X^-)_r$ , +K and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

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if P is -N $^{+}$ R₂₂(X $^{-}$ )_r, K and M are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if Z is a sulphur atom with  $R_2$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

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 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.
  - 95. A process for dyeing fibers, comprising: separately storing a first composition,

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separately storing a second composition,
thereafter mixing said first and second compositions,
applying said mixture to said fibers, and
developing for a period of time sufficient to achieve the desired coloration,

- wherein said first composition comprises at least one cationic direct dye and at least one oxidation base,
  - wherein said at least one cationic direct dye is chosen from:

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$$CH_3$$
 $N = N$ 
 $N = N$ 
 $CH_3$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$H_3C-N+$$
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=CH C_2H_4CN$ 
 $C_1$ 
 $C_2$ 
 $C_3$ 
 $C_4$ 
 $C_1$ 
 $C_2$ 
 $C_3$ 
 $C_4$ 
 $C_4$ 
 $C_4$ 
 $C_5$ 
 $C_5$ 
 $C_7$ 
 $C_8$ 
 $C_8$ 
 $C_8$ 

$$HO-H_4C_2-N+$$
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI$  (17)

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3$$
 $N+$ 
 $N=$ 
 $N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (110)$$

$$CH_3$$

$$\begin{array}{c}
CH_3 \\
N+\\
N+\\
CH_3
\end{array}$$

$$\begin{array}{c}
N+\\
CH_3
\end{array}$$

$$\begin{array}{c}
CI \\
OCH_3
\end{array}$$

$$\begin{array}{c}
OCH_3
\end{array}$$

$$\begin{array}{c|c} CH_3 \\ N+ \\ N=N- \\ \hline \\ CH_3 \end{array}$$

$$\begin{array}{c|c} C_2H_5 \\ \hline \\ C_2H_5 \end{array}$$

$$\begin{array}{c|c} C_1 \end{array} \qquad (I12)$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4-CN$ 
 $C_2H_4-CN$ 
 $C_2H_4-CN$ 
 $C_2H_4-CN$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
CH_3
\end{array}$$
CI (I15)

$$CH_3 \qquad N+ \qquad N=N \qquad NH_2 \qquad CI \qquad (I16)$$

$$CH_3 \qquad CH_3 \qquad CH_3 \qquad CI \qquad (I16)$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 

$$\begin{array}{c}
CH_3 \\
N \\
N \\
CH_3
\end{array}$$

$$CI \\
CH_3$$

$$CH_3$$

$$CH_3$$
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N \\
 &$$

$$CH_3$$
 $N$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CH_2$ - $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_2$ - $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 &$$

$$\begin{array}{c|c} & CH_3 \\ \hline \\ CH_3 \\ \hline \\ CH_3 \end{array} \qquad CI \qquad (I24)$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N NH_2$ 
 $CI$ 
 $(126)$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & S
\end{array}$$

$$\begin{array}{c|c}
 & CH_2\text{-}CH_2\text{-}CN \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_2\text{-}CH_2\text{-}CN \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N=N-NH-NH_2$ 
 $CH_3$ 
 $CH_3$ 

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$$N = N - NH_2 \qquad CI \qquad (I32)$$

$$N + CH_3$$

$$CH_3$$

$$N=N CH_3$$
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - CH_3$$

$$CH_3$$

$$CI$$

$$CI$$

$$CI$$

$$CI$$

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$$H_3C-O N=N+$$
 $N=N O-CH_3$ 
 $CH_3$ 
 $CH$ 

$$H_3C$$
 $O$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$N - S$$
 $N = N - N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CH_3 \\ \hline N+ \\ CH_3 \\ \end{array}$$

$$N = N - \begin{array}{c} N \\ \hline N \\ \end{array}$$

$$NH \qquad CI \qquad (143)$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c|c}
 & C_2H_5 \\
\hline
N+ \\
S & N=N \\
\hline
N- \\
N- \\
N- \\
N- \\
N- \\
N- \\
CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3SO_4 \\
CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3SO_4
\end{array}$$

$$\begin{array}{c}
 & CH_3SO_4
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $N+$   $N=N NH_2$   $CI$   $(151)$   $CH_3$   $O-CH_3$ 

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$$N \cdot N + N = N - N - N - CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N+$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N CH_3$   $CI^-$  (II3)

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$  (II5)

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$$CH_3$$
 $CH_3$ 
 $CH_3$ 

and

$$H_2N$$
 $N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH = N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N$ 
 $CH=N$ 
 $CH=N$ 
 $CH_3$ 
 $CH=N$ 
 $CH_3$ 
 $CH=N$ 
 $CH_3$ 
 $CH=N$ 
 $CH=$ 

$$H_3C$$
 $O$ 
 $CH=N-N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$ 
 $(IIII5)$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$   $CI$   $CI$  (III9)

$$\begin{array}{c|c} & CH=N-N- \\ \hline & CH_3 \\ \hline & CH_3 \\ \end{array} \qquad \begin{array}{c} CH_3SO_4 & (III10) \\ \hline \end{array}$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH=N-N-CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$H_3C-N+$$
  $CH=CH NH_2$   $CH_3COO$  (III16)

$$H_3C-N+$$
  $CH=N-N CI$  (III17)

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

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$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N \longrightarrow OH \qquad (IV)_2$$

$$N+N=N \longrightarrow N+COCH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N - CH_2CH_2OH - CH_2CH_2$$

$$N+N=N-N+2$$

$$(IV)_5$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{N+} \\
 & \text{N-} \\
 & \text{N-} \\
 & \text{CH}_3
\end{array}$$
(IV)₁₀

$$N+N=N$$
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c}
CH_3 \\
N+\\
N=N-\\
\end{array}$$

$$NH_2 \qquad (IV)_{13}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N-CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3 \\
 & CH_3
\end{array}$$
(IV)₁₇

$$\begin{array}{c|c} CH_3 & NHCOCH_3 \\ \hline N+ N=N & CH_3 \\ \hline CH_3 & CH_3 \end{array}$$

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \\ \hline & & \\ - & & \\ \hline & & \\ CH_3 \\ \hline & & \\ CH_3 \\ \end{array} \tag{IV)}_{19}$$

$$\begin{array}{c|c} H_3C \\ \hline N+ \\ \hline N- \\ \hline \end{array} = N - \begin{array}{c} CH_3 \\ CH_3 \end{array} \qquad (IV)_{20}$$

$$CH_3$$
 $N+N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline \\ O^{-} & & \\ \end{array}$$

$$\begin{array}{c|c} C_2H_5 & & \\ \hline \\ C_2H_5 & & \\ \end{array}$$

$$(IV)_{22}$$

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} CH_3 \\ CH_3 \end{array}$$
 (IV)₂₃

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & O
\end{array}$$
(IV)₂₄

$$N=N - CH_3 CH_3 CH_3$$

$$O^{-}$$

$$N=N - CH_2CH_2OH CH_2CH_2OH$$

$$CH_2CH_2OH CH_2OH CH_2OH$$

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\$$

$$\begin{array}{c} \begin{array}{c} \\ \text{N+} \\ \text{CH}_3 \end{array} \\ \begin{array}{c} \text{CH}_3 \\ \text{CH}_3 \\ \end{array} \\ \end{array}$$

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & & \\ & N+ & N=N & & & \\ & & & \\ & CH_3 & & \\ & & & CH_3SO_4^- & & \\ \end{array}$$
 (IV)₃₁

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$$\begin{array}{c|c} CI \\ \hline N+ \\ CH_3 \\ \hline CH_3SO_4^- \end{array}$$

$$\begin{array}{c|c} CH_3 \\ \hline CH_3 \\ \end{array}$$

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$$H_{3}C \longrightarrow N+ N=N \longrightarrow N \longrightarrow H$$

$$CH_{3}SO_{4}^{-}$$

$$CH_{3}SO_{4}^{-}$$

$$(IV)_{34}$$

$$\begin{array}{c|c} H_3C \\ \hline N+ \\ CH_3 \\ \hline CH_3 \\ CH_3SO_4 \end{array} \qquad (IV)_{35}$$

$$\begin{array}{c|c} & & \text{NHCOCH}_3 \\ \hline \text{N+} & \text{N=N} & & \text{CH}_3 \\ \hline \text{CH}_3 & & \text{CH}_3 \\ \hline \text{CH}_3 & & \text{CH}_3 \\ \end{array}$$

$$N=N - CH_3 CH_3 CH_3 CH_3 CH_3$$

$$CH_3 CO_4$$

$$N=N - CH_3$$

$$CH_3 CO_4$$

$$CH_3 CO_4$$

$$CH_3 CO_4$$

$$\begin{array}{c} CI \\ N=N \\ \hline \\ CH_3 \\ CH_3 \\ \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \\ \end{array}$$

$$\begin{array}{c} (IV)_{40} \\ \end{array}$$

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$$N=N \xrightarrow{N+COCH_3} N+C_2H_5SO_4$$

$$C_2H_5$$

$$C_2H_5$$

$$C_2H_5$$

$$C_3$$

$$CH_3$$

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$$\begin{array}{c} H_3C \\ \hline \\ N=N \\ \hline \\ C_4H_9 \end{array}$$

$$(IV)_{43}$$

$$\begin{array}{c|c} CH_3 \\ N+N=N & N \\ OCH_3 & OCH_3 \\ CH_3SO_4 & CG_6H_5 \end{array}$$
 (IV)₄₄

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$$\begin{array}{c|c} CH_3 \\ \hline N+N=N \\ \hline CH_3 & CIO_4 \end{array}$$

$$\begin{array}{c|c} CH_3 \\ \hline CH_3 \end{array} \qquad (IV)_{47}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline N+ N=N & NH_2 \\ \hline CH_3 & NH_2 \end{array}$$
 (IV)₄₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $(IV)_{50}$ 

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FARABOW, GARRETT,
& DUNNER, L.L.P.
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202-408-4000

$$H_3C$$
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$$\begin{array}{c|c} & NH_2 \\ \hline N+ & N=N \\ \hline \\ O- & CH_3 \end{array}$$
 (IV)₇₀

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$$N = N - NH_2$$

$$| - NH_2 - NH$$

$$N=N$$
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3CH_3OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

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$$N = N \xrightarrow{\text{NH}_2} \text{NH}_2$$

$$CH_3 \text{CH}_3 \text{SO}_4$$

$$(IV)_{74}$$

$$N=N \xrightarrow{\text{CH}_3} \text{NH}_2$$

$$CH_3 \text{CH}_3 \text{SO}_4$$

$$(IV)_{75}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $NH_2$ 
 $CH_3$ 
 $NH_2$ 
 $NH_2$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$(IV)_{77}$$

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- wherein said at least one oxidation base is chosen from:
   para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols,
   ortho-aminophenols and heterocyclic bases;
- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one oxidizing agent is chosen from: hydrogen
   peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes, and
  - wherein at least one thickening polymer is chosen from:

nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)  $C_{16}$ - $C_{18}$  alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/ $C_{10}$ - $C_{30}$  alkyl acrylate;

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cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.

96. A process for dyeing fibers, comprising:

separately storing a first composition,

separately storing a second composition,

thereafter mixing said first and second compositions,

applying said mixture to said fibers, and

developing for a period of time sufficient to achieve the desired coloration,

wherein said first composition comprises:

at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), and (IV) below, at least one thickening polymer; and at least one oxidation base;

(a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R_1 \\ R_2 \end{pmatrix} - N \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

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 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH₂ radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

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$$R_4$$
 $R_4$ 
 $R_5$ 
 $R_4$ 
 $R_4$ 
 $R_5$ 
 $R_4$ 
 $R_5$ 
 $R_4$ 
 $R_5$ 
 $R_4$ 
 $R_5$ 
 $R_6$ 
 $R_7$ 
 $R_8$ 

and

in which:

 $\mbox{R}_{4}$  is chosen from  $\mbox{C}_{1}\mbox{-}\mbox{C}_{4}$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $R_{\scriptscriptstyle 5}$  is chosen from  $C_{\scriptscriptstyle 1}\text{-}C_{\scriptscriptstyle 4}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

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$$B-N=N$$

$$X$$

$$R_{9}$$

$$R_{7}$$

$$(II)$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X⁻ is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{11}$ 
 $R_{12}$ 
 $R_{12}$ 
 $R_{13}$ 
 $R_{14}$ 
 $R_{15}$ 
 $R_{15}$ 

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in which:

R₁₀ is chosen from C₁-C₄ alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

$$E - D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$X - R_{16} - R_{16}$$
(III)

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

 $\ensuremath{R_{\text{15}}}$  is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

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X⁻ is chosen from anions,

E is chosen from structures  $E_1$  to  $E_8$  below:

**E**1

and

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in which R' is chosen from  $C_1\text{-}C_4$  alkyl radicals;

wherein when m=0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_{\scriptscriptstyle 1}$  to  $G_{\scriptscriptstyle 3}$  below:

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$$R_{19}$$
  $R_{18}$   $R_{21}$   $R_{21}$   $R_{21}$   $R_{21}$   $R_{18}$   $R_{18}$   $R_{18}$   $R_{18}$   $R_{21}$   $R_{18}$   $R_{21}$   $R_{21}$   $R_{22}$   $R_{23}$   $R_{24}$   $R_{25}$   $R$ 

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

R₁₉ is chosen from C₁-C₄ radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1\text{-}C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

K is chosen from a -CH radical, -C(C₁-C₄ alkyl) radicals and -N +R₂₂(X⁻), radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N⁺R₂₂(X⁻), radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X⁻ is chosen from anions;

wherein if  $R_{22}$  is  $O^{-}$ , V is zero;

wherein if K or P or M is  $C_1$ - $C_4$ -N⁺-alkyl X⁻, either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is  $-N^+R_{22}(X)_r$ , Wand P are the same and are chosen from a -CH radical and  $-C(C_1-C_4 \text{ alkyl})$  radicals;

wherein if M denotes -N $^{+}R_{22}(X^{+})$ , K and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

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if P is -N $^+$ R $_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C(C $_1$ -C $_4$  alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

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 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - wherein said second composition comprises at least one oxidizing agent.
    - 97. A process for dyeing fibers, comprising: separately storing a first composition,

separately storing a second composition,

thereafter mixing said first and second compositions,
applying said mixture to said fibers, and
developing for a period of time sufficient to achieve the desired coloration,

- wherein said first composition comprises at least one cationic direct dye, at least one oxidation base, and at least one thickening polymer,
  - wherein said at least one cationic direct dye is chosen from:

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$$CH_3$$
 $N = N$ 
 $N = N$ 
 $CH_3$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=CH C_2H_4CN$ 
 $C_3$ 
 $C_2H_4CN$ 

$$HO-H_4C_2-N_+$$
  $CH=CH-CH_3$   $CH_3$   $CI$  (16)

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$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI$ 
 $CI$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c}
CH_3 \\
N+-N \\
CH_3
\end{array}$$

$$CI \quad (19)$$

$$N \longrightarrow N+$$

$$N \longrightarrow N = N \longrightarrow NH_2$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $OCH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c} CH_3 \\ N+ \\ N=N- \\ \hline \\ CH_3 \\ CH_3 \\ \end{array} CI \qquad (I12)$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
CH_3
\end{array}$$
CI (I15)

$$\begin{array}{c}
CH_3 \\
N+ \\
CH_3
\end{array}$$

$$N=N- \\
CH_3$$

$$CH_3$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $C_2H_5$ 
 $CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CI$ 

$$CH_3$$
 $N=N$ 
 $CH_2$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

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$$CH_3$$
 $N=N$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 &$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (124)$$

$$CH_3 \qquad CH_3 \qquad CH_3$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
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 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
NH_2
\end{array}$$
CI (126)

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N=N-NH-NH_2$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N = N - NH_2 \qquad CI \qquad (I32)$$

$$N = N + CH_3$$

$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N=N$   $CH_3$   $C$ 

$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $N=N N=N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - CI$$

$$CH_3$$

$$CI$$

$$CI$$

$$CI$$

$$CI$$

$$CI$$

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$$H_3C-O$$
 $N=N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $O$ 
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c|c}
C_2H_5 \\
N+\\
N=N-\\
\end{array}$$

$$\begin{array}{c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c}
CH_3SO_4
\end{array}$$

$$\begin{array}{c}
CH_3SO_4
\end{array}$$

$$\begin{array}{c}
CH_3SO_4
\end{array}$$

$$N+$$
 $N=$ 
 $N=$ 
 $N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $N+$   $N=N NH_2$   $CI$   $(I51)$   $CH_3$   $O-CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N+$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$CH = N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CI$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=$ 
 $CH_3$ 
 $CH=$ 
 $CH=$ 
 $CH_3$ 
 $CH=$ 
 $CH=$ 

$$H_3C$$
 $N$ 
 $CH=N$ 
 $CH=$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $(III5)$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$CH=N-N$$
 $CH_3SO_4$  (III11)

$$CH=N-N$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CH_3SO_4$  (III13)

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$$CH_3$$
 $N=N$ 
 $OCH_3$ 
 $CI$ 
 $OCH_3$ 
 $OC$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
  $CH=CH NH_2$   $CH_3COO^-$  (III16)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI^-$ 
(III17)

$$CI$$
 $N=N$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

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$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c} & & \text{NHCOCH}_3 \\ \hline & & \\ N+ & \\ & & \\ O^- & \\ \end{array} \\ N = N \\ \begin{array}{c} & \\ CH_3 \\ \\ CH_3 \end{array}$$
 (IV)₃

$$N+N=N-CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N-N+2$$

$$(IV)_5$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_{3}C \xrightarrow{N+} N = N \xrightarrow{C_{2}H_{5}} C_{2}H_{5}$$

$$(IV)_{8}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$N+N=N$$
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ N=N \end{array} \longrightarrow \begin{array}{c} N < CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \end{array}$$
 (IV)₁₂

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$$\begin{array}{c}
CH_3 \\
N+\\
N=N \\
\hline
\end{array}$$

$$\begin{array}{c}
-NH_2 \\
\end{array}$$
(IV)₁₃

$$H_3C \longrightarrow N+ N=N \longrightarrow NH_2$$
 (IV)₁₄

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
\hline
 & CH_3 \\
 & CH_3
\end{array}$$
(IV)₁₇

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$$\begin{array}{c|c} & & \text{CH}_3 & \\ & & \text{N} + \text{CH}_3 & \\ & & \text{CH}_3 & \\ & & \text{CH}_3 & \\ \end{array}$$

$$\begin{array}{c|c} & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$\begin{array}{c|c} H_3C & \\ N+ & N=N \end{array} \longrightarrow \begin{array}{c} CH_3 \\ CH_3 \end{array} \qquad (IV)_{20}$$

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$N+N=N-C_2H_5$$
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \\ \hline \\ O^- & CH_3 \\ \hline CH_3 & (IV)_{23} \end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+N=N \\
 & O^{-}
\end{array}$$
(IV)₂₄

$$N=N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$N=N - CH_2CH_2OH CH_2CH_2OH$$

$$CH_2CH_2OH CH_2OH CH_2OH$$

$$\begin{array}{c|c} & CH_3 \\ \hline CH_3 & CH_3SO_4^- \end{array}$$

$$\begin{array}{c|c}
 & \text{NH} \\
 & \text{NH} \\
 & \text{CH}_3 \\$$

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$$CH_3$$
 $N+N=N-N+2$ 
 $CH_3$ 
 $CH_3SO_4^ CH_3SO_4^-$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}SO_{4}^{-}$$

$$(IV)_{32}$$

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

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$$N=N - CH_3 CH_3 CH_3 CH_3 CH_3$$

$$CH_3 SO_4$$

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$$\begin{array}{c|c}
 & H_3C \\
\hline
 & N=N \\
\hline
 & N+ \\
 & C_2H_5SO_4^-
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & (IV)_{39}
\end{array}$$

$$\begin{array}{c|c}
CI \\
\hline
N=N \\
\hline
CH_3 \\
CH_3
\end{array} \qquad (IV)_{40}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

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$$N = N$$

$$N = N$$

$$C_{2}H_{5}SO_{4}^{-}$$

$$C_{2}H_{5}SO_{4}^{-}$$

$$C_{2}H_{5}SO_{4}^{-}$$

$$C_{3}CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}$$

$$\begin{array}{c|c}
 & H_3C \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c} & CH_3 \\ \hline N+N=N & N \\ \hline OCH_3 & O \\ CH_3SO_4 & C_6H_5 \end{array}$$

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$$\begin{array}{c|c} S & CH_3 \\ \hline \\ CH_3 & CIO_4 \end{array} \qquad \begin{array}{c|c} CH_3 \\ \hline \\ CH_3 \end{array} \qquad (IV)_{46}$$

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N+ \\
N- \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

$$\begin{array}{c|c}
 & S & CH_3 \\
 & N+ & N=N \\
 & CH_3 & I & NH_2
\end{array}$$

$$(IV)_{49}$$

$$H_3C \longrightarrow N+ N=N \longrightarrow NH$$

$$CIO_4 OH$$

$$OH$$

$$(IV)_{50}$$

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$$\begin{array}{c|c}
 & S \\
 & N+N=N \\
 & CI \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & O-NH \\
 & OH
\end{array}$$

$$\begin{array}{c|c}
 & (IV)_{51} \\
 & OH
\end{array}$$

$$N+N=N-N+2$$

$$OCH_3$$
(IV)₅₃

$$N+N=N$$
 OH  $N=N$   $N+N=N$   $N+N$   $N+N=N$   $N+N$   $N+N=N$   $N+N$   $N$ 

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$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$O_2N$$
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$$H_3C$$
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$$\begin{array}{c|c}
 & NH_2 \\
 & NH_2 \\
 & CH_3
\end{array}$$
(IV)₇₀

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 &$$

$$N = N - NH_2$$

$$V = N - NH_2$$

$$N=N$$
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3CH_3OH$ 
 $CH_3SO_4$ 
 $CH_3CH_3OH$ 

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$$N = N \longrightarrow NH_{2}$$

$$\downarrow N+ \qquad \downarrow NH_{2}$$

$$\downarrow CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N=N - NH_{2}$$

$$CH_{3} CH_{3}SO_{4} CH_{3}SO_{4} (IV)_{75}$$

$$CH_3$$
 $N+N=N-N+1$ 
 $N+N=N-N+1$ 
 $N+1$ 
 $N+1$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$
(IV)₇₇

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- wherein said at least one oxidation base is chosen from:
   para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols,
   ortho-aminophenols and heterocyclic bases;
- nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)  $C_{16}$ - $C_{18}$  alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

wherein said at least one thickening polymer is chosen from:

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride; and

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- wherein said second composition comprises at least one oxidizing agent chosen
   from hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes.
- 98. A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,
- wherein said first composition comprises at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), (III') and (IV) below,
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R_{1} \\ R_{2} \end{pmatrix} - N \begin{pmatrix} R_{1} \\ R_{2} \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

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 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

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and

in which:

 $R_4$  is chosen from  $C_1$ - $C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $R_{\scriptscriptstyle 5}$  is chosen from  $C_{\scriptscriptstyle 1}\text{-}C_{\scriptscriptstyle 4}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

$$B-N=N$$

$$X$$

$$R_{g}$$

$$R_{g}$$

$$R_{7}$$

$$R_{1}$$

$$R_{2}$$

$$R_{3}$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{11}$ 
 $R_{12}$ 
 $R_{12}$ 
 $R_{13}$ 
 $R_{14}$ 
 $R_{15}$ 
 $R$ 

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in which:

R₁₀ is chosen from C₁-C₄ alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

$$E - D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$X - R_{16} - R_{16}$$
(III)

in which:

R₁₃ is chosen from a hydrogen atom, C₁-C₄ alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

 $\ensuremath{R_{\text{15}}}$  is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

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X⁻ is chosen from anions,

E is chosen from structures  $\mathsf{E_1}$  to  $\mathsf{E_8}$  below:

and

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in which R' is chosen from  $C_1\text{-}C_4$  alkyl radicals;

wherein when m=0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1\text{-}C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_1$  to  $G_3$  below:

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$$R_{19}$$
 $R_{19}$ 
 $R_{18}$ 
 $R_{18}$ 
 $R_{21}$ 
 $R_{18}$ 
 $R_{21}$ 
 $R_{18}$ 
 $R_{18}$ 
 $R_{21}$ 
 $R_{18}$ 
 $R_{21}$ 
 $R_{21}$ 
 $R_{21}$ 
 $R_{22}$ 
 $R_{23}$ 
 $R_{24}$ 
 $R_{25}$ 
 $R$ 

in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

R₁₉ is chosen from C₁-C₄ radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

K is chosen from a -CH radical, -C(C₁-C₄ alkyl) radicals and -N⁺R₂₂(X⁻), radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N⁺R₂₂(X⁻), radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X is chosen from anions;

wherein if R₂₂ is O⁻, r is zero;

wherein if K or P or M is  $C_1$ - $C_4$ -N⁺-alkyl X⁻, either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is  $-N^+R_{22}(X^-)_r$ , Mand P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

wherein if M denotes -N  $^+$ R $_{22}(X^-)_r$ ,  $\swarrow$  and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

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if P is -N $^+$ R $_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C(C $_1$ -C $_4$  alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

$$R_{25}$$
  $R_{26}$   $R_{26}$ 

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

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 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and

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(ii)₃ - cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.

A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,

wherein said first composition comprises at least one cationic direct dye chosen
 from:

$$\begin{array}{c|c}
 & CH_3 \\
 & N \\
 &$$

$$\begin{array}{c|c}
CH_3 \\
N + \\
CH_3
\end{array}$$

$$CH_3 \\
CH_3$$

$$CH_3 \\
CH_3$$

$$CH_3 \\
CH_3$$

$$H_3C-N+$$
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH & CH & CH_3 \\ \hline & CH_3 & CI & (I4) \\ \hline & CH_3 & CI & CH_3 \\ \hline \end{array}$$

$$H_3C-N+$$
 $CH$ 
 $CH$ 
 $CH$ 
 $C_2H_4CN$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CI$ 

$$HO-H_4C_2-N+$$
 $CH=CH CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI^ CH_3$ 

$$CH_3$$
 $N+$ 
 $N=$ 
 $N=$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
C_2H_5
\end{array}$$

$$C_2H_5$$

$$C_2H_5$$

$$CH_3$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN

$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI^- \\
CI_3
\end{array}$$
(I15)

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-$$

$$N=N-$$

$$NH_2 \qquad CI^- \qquad (116)$$

$$CH_3 \qquad CH_3$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 

$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CH_2$ - $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline CH_3 \\ \hline CH_3 \\ \end{array} CH_3 \end{array} \qquad CI \qquad (I24)$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=N NH_2$ 
 $N=N NH_2$ 
 $N=N NH_2$ 
 $N=N NH_2$ 
 $NH_2$ 
 $NH$ 

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & S
\end{array}$$

$$\begin{array}{c|c}
 & CH_2\text{-}CH_2\text{-}CN \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_2\text{-}CH_2\text{-}CN \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+ \longrightarrow N=N- \bigvee CH_3 \qquad CI \qquad (130)$$

$$CH_3$$
 $N=N-NH-NH_2$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $CH_3$ 
 $C$ 

$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (I36)$$

$$CH_3 \qquad CI$$

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$$H_3C-O N=N+$$
 $O-CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3 \\
 & CH_3
\end{array}$$
CI (144)

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3 \\$$

$$\begin{array}{c|c}
 & C_2H_5 \\
\hline
 & N+ \\
 & N=N \\
\hline
 & CH_3 \\
\hline
 & CH_3SO_4
\end{array}$$
(149)

$$N+$$
 $N=$ 
 $N=$ 
 $N$ 
 $CI$ 
 $CI$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

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$$N = N - N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
  $N=N$ 
 $CH_3$ 
 $C$ 

$$H_3C$$
 $N+$ 
 $N=N CH_3$ 
 $CH_3$ 
 $CH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

and

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CI$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=$ 
 $C$ 

$$H_3C$$
 $O$ 
 $CH=N-N$ 
 $CH=N$ 
 $C$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $(IIII5)$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$   $CI$   $CI$  (III9)

$$CH=N-N$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4 \qquad (III11)$$

$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$\begin{array}{c|c}
CH_3 \\
N \\
N+ \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI \\
CH_3
\end{array}$$
(III14)

$$CH=CH$$
 $CH_3$ 
 $CH_3COO$ 
 $CH_3COO$ 
 $CH_3COO$ 

$$H_3C-N+$$
  $CH=CH NH_2$   $CH_3COO$  (III16)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$ 
 $(III17)$ 
 $CH_3$ 

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

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$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$

$$N = N \longrightarrow OH \qquad (IV)_2$$

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$N = N - CH_2CH_2OH - CH_2CH_2OH - CH_2CH_2OH$$

$$N+N=N-N+2$$

$$N+N=N-N+2$$

$$(IV)_5$$

$$N+N=N-N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C \xrightarrow{N+} N = N \xrightarrow{CH_3} CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{N+} \\
 & \text{N} = \text{N} \\
 & \text{CH}_3
\end{array}$$
(IV)₁₀

$$V_{N+}^{C_{1}} = N - V_{C_{2}H_{5}}^{C_{2}H_{5}}$$
 $V_{0}^{C_{2}H_{5}}$ 
 $V_{11}^{C_{2}H_{5}}$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ N=N \end{array} \longrightarrow \begin{array}{c} N < CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \end{array}$$
 (IV)₁₂

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
\hline
\end{array}$$

$$\begin{array}{c|c}
-NH_2 \\
\end{array}$$
(IV)₁₃

$$H_3C \longrightarrow N+ N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline & \\ CH_3 & \\ CH_3 & \\ \end{array}$$
 (IV)₁₆

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
CH_3
\end{array}$$
(IV)₁₇

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$$\begin{array}{c|c} & & \text{CH}_3 & \\ & & \text{N} + \\ & & \\ \hline & & \\ \hline & & \\ \hline & & \\ & & \\ \hline & & \\ & & \\ \hline & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$\begin{array}{c|c} & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} & CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₁₉

$$H_3C$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$CI$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} CH_3 \\ CH_3 \end{array}$$
 (IV)₂₃

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$$\begin{array}{c|c} CH_3 & NHCOCH_3 \\ \hline N+ & N=N \\ \hline \end{array} \begin{array}{c} CH_3 \\ CH_3 \\ \end{array}$$

$$\begin{array}{c|c} CH_3 \\ \end{array}$$

$$\begin{array}{c|c} & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} & CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₁₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$CI$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \longrightarrow \begin{array}{c} CH_3 \\ CH_3 \end{array} \qquad (IV)_{23}$$

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & O^{-}
\end{array}$$
(IV)₂₄

$$N=N \xrightarrow{CH_3} (IV)_{25}$$

$$O^-$$

$$N=N - CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N$$
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 

$$N+V=N$$
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

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$$H_{3}C \xrightarrow{N+} N=N \xrightarrow{CH_{3}SO_{4}} N \xrightarrow{H} (IV)_{34}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

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$$N=N - CH_3$$

$$CH_3 CH_3 CO_4$$

$$CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3$$

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$$N=N - CH_3$$

$$CH_3$$

$$CH_3SO_4$$

$$CH_3$$

$$CH_3$$

$$N=N \xrightarrow{H_3C} NCH_3 CH_3$$

$$C_2H_5SO_4^{-1}$$

$$C_2H_5$$

$$C_2H_5$$

$$\begin{array}{c|c}
CI & CH_3 \\
\hline
N+ & CH_3SO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 & (IV)_{40} \\
\hline
CH_3 & (IV)_{40}
\end{array}$$

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NHCOCH₃

$$CH_3$$

$$C_2H_5SO_4$$

$$C_2H_5$$

$$C_2H_5$$

$$C_2H_5$$

$$\begin{array}{c|c} & H_3C \\ \hline & N=N \\ \hline & CH_3 \\ \hline \end{array}$$

$$\begin{array}{c|c} CH_3 \\ N+N=N \\ OCH_3 \\ CH_3SO_4 \end{array} \qquad \begin{array}{c} CH_5 \\ C_6H_5 \end{array}$$

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$$\begin{array}{c|c}
 & S \\
 & N+ \\
 & N=N \\
 & CH_3
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$$\begin{array}{c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3 \\
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\end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
CH_3 \\
CIO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline N+ N=N & NH_2 \\ \hline CH_3 & I & NH_2 \end{array}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $(IV)_{50}$ 

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$$\begin{array}{c|c}
S & O \\
N+N=N & OH
\end{array}$$

$$\begin{array}{c|c}
CH_3 & CI & OH
\end{array}$$

$$\begin{array}{c|c}
O & OH
\end{array}$$

$$\begin{array}{c|c}
O & OH
\end{array}$$

$$\begin{array}{c|c}
O & OH
\end{array}$$

$$N+N=N-N+2$$

$$OCH_3$$
(IV)₅₃

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=N$ 
 $CH_3$ 
 $(IV)_{58}$ 

$$N+N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$\begin{array}{c|c}
 & CH_3
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$$N+$$
 $N=N$ 
 $N=N$ 

$$N+N=N \longrightarrow OH$$

$$(IV)_{62}$$

$$O_2N$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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& DUNNER, L. L. P.
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202-408-4000

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
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$$CH_3$$
 $N=N$ 
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$$NH_{2}$$

$$NH_{2}$$

$$O^{-}$$

$$CH_{3}$$

$$(IV)_{70}$$

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 &$$

$$N = N - NH_2$$

$$V = N - NH_2$$

$$N=N$$
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3CH_3OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

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$$N = N - NH_{2}$$

$$N = N - NH_{2}$$

$$CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N=N \xrightarrow{\text{CH}_3} \text{NH}_2$$

$$CH_3 \text{CH}_3 \text{SO}_4$$

$$(IV)_{75}$$

$$CH_3$$
 $N+N=N$ 
 $N+N=N$ 
 $N+1$ 
 $N+1$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$
(IV)₇₇

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and

- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one oxidizing agent is chosen from:
   hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes;
- wherein said at least one thickening polymer is chosen from:
   nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl
   ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene,
   vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl
   acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)
   C₁₆-C₁₈ alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

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cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.

- 100. A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,
- wherein said first composition comprises at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), (III') and (IV) below, and at least one thickening polymer,
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R'_3 \\ R_2 \end{pmatrix} - \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a

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heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

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and

in which:

 $R_4$  is chosen from  $C_1\text{-}C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $\ensuremath{R_{\scriptscriptstyle{5}}}$  is chosen from  $\ensuremath{C_{\scriptscriptstyle{1}}\text{-}C_{\scriptscriptstyle{4}}}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

$$B-N=N- \begin{array}{c} R_8 \\ \hline \\ X \end{array} \begin{array}{c} R_7 \\ \hline \\ R_7 \end{array} \tag{II)}$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X⁻ is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R$ 

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in which:

 $R_{10}$  is chosen from  $C_1$ - $C_4$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

$$E-D_{1}=D_{2}-(N)_{m}$$

$$X = R_{15}$$

$$R_{15}$$

$$R_{16}$$
(III)

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

 $R_{15}$  is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

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X is chosen from anions,

E is chosen from structures  $\dot{E}_1$  to  $E_8$  below:

and

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in which R' is chosen from C₁-C₄ alkyl radicals;

wherein when m = 0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from C₁-C₄ alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_{\scriptscriptstyle 1}$  to  $G_{\scriptscriptstyle 3}$  below:

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in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

R₁₉ is chosen from C₁-C₄ radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

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together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N⁺R₂₂(X⁻), radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

P is chosen from a -CH radical, -C(C₁-C₄ alkyl) radicals and -N +R₂₂(X-)_r radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X⁻ is chosen from anions;

wherein if R₂₂ is O⁻, r is zero;

wherein if K or P or M is  ${}^{\ }C_1$ - $C_4$ -N  ${}^+$ -alkyl X , either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is  $-N^+R_{22}(X^-)_r$ , M and P are the same and are chosen from a -CH radical and  $-C(C_1-C_4 \text{ alkyl})$  radicals:

wherein if M denotes -N $^+$ R $_{22}(X^-)$ , K and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

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if P is -N $^+$ R $_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C(C $_1$ -C $_4$  alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

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 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;

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- (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
- (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain; and
- wherein said second composition comprises at least one oxidizing agent.
- A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,
- wherein said first composition comprises at least one cationic direct dye and at
   least one thickening polymer,
  - wherein said at least one cationic direct dye is chosen from:

$$CH_3$$
 $N = N - CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH & CH & CH_3 \\ \hline & CH_3 & CI & (I4) \\ \hline & CH_3 & \end{array}$$

$$HO-H_4C_2-N+$$
 $CH=CH CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI^{-}$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=$ 
 $N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (110)$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $OCH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
C_2H_5
\end{array}$$

$$C_2H_5$$

$$C_2H_5$$

$$C_2H_5$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN
 $C_2H_4$ -CN

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+\\
N\\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI \\
CI
\end{array}$$

$$\begin{array}{c|c}
CI \\
CI
\end{array}$$

$$\begin{array}{c|c}
CI \\
CI
\end{array}$$

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-$$

$$N=N-$$

$$CH_3 \\
CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 

$$\begin{array}{c}
CH_3 \\
N \\
N+\\
CH_3
\end{array}$$
 $\begin{array}{c}
CH_3 \\
CH_3
\end{array}$ 
 $\begin{array}{c}
CH_3 \\
CH_3
\end{array}$ 

$$\begin{array}{c|c}
CH_3 \\
N \\
N+ \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
H \\
C_2H_5
\end{array}$$
CI (119)

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$$CH_3$$
 $N=N$ 
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline \\ CH_3 \\ \hline \\ CH_3 \\ \end{array} \qquad CI \qquad (I24)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (125)$$

$$CH_3 \qquad CH_3 \qquad CH_3$$

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
NH_2
\end{array}$$
CI (126)

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$$CH_3$$
 $N+$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N=N$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N = N - NH_2 \qquad CI \qquad (132)$$

$$CH_3$$

$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N=N$   $CH_3$   $CH_3$   $CH_3$   $CH_3$ 

$$H_3C-O \longrightarrow N = N + CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N = N - NH_2 \qquad C1 \qquad (136)$$

$$CH_3 \qquad C1$$

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$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-O$$
 $N=N+$ 
 $N=N$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3 \\
 & CH_3
\end{array}$$
CI (144)

$$\begin{array}{c|c}
CH_3 \\
N+ \\
CN
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c|c}
 & C_2H_5 \\
\hline
N+ \\
N=N- \\
\hline
N-N \\
CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3SO_4 \\
CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3SO_4
\end{array}$$

$$\begin{array}{c}
 & CH_3SO_4
\end{array}$$

$$N+$$
 $N=$ 
 $N$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N O-CH_3$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

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$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N CH_3$   $CH_3$   $CH_3$   $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$  (II5)

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$$H_3C$$
 $N$ 
 $S$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3$ 
 $CH_3$ 

and

$$N \cdot N + N + N = N - N \cdot CH_3$$
 $CH_3 \cdot CH_3 \cdot CH_3$ 
 $CH_3 \cdot CH_3 \cdot CH_3 \cdot CH_3 \cdot CH_3$ 

$$CH_3$$

$$CH = N - N - CH_3$$

$$CI$$

$$CH_3$$

$$CI$$

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=$ 
 $C$ 

$$H_3C$$
 $O$ 
 $CH=N-N$ 
 $CH=N$ 
 $C$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$ 
 $(IIII5)$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$CH_3SO_4 \qquad (III11)$$

$$CH_3$$

$$CH = N - N - CH_3 CH_3$$

$$CH_3$$

$$CH_3$$

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$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$CH=CH$$
 $CH_3$ 
 $CH_3COO$  (III15)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI^-$  (III17)

$$CI \longrightarrow N=N \longrightarrow CI$$
 (III18)

 $H_3C \longrightarrow N+$ 
 $CH_3$ 

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$$CH_3$$
  $N+$   $CH=CH$   $CI$   $(III'2)$  ; and

$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N \longrightarrow OH \qquad (IV)_2$$

$$\begin{array}{c|c} & \text{NHCOCH}_3 \\ \hline \\ N+ & N=N \\ \hline \\ - & \text{CH}_3 \\ \hline \\ CH_3 \end{array} \qquad \text{(IV)}_3$$

$$N+N=N-CH_2CH_2OH CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N-N+2$$

$$(IV)_5$$

$$N+N=N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

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$$\begin{array}{c}
CH_3 \\
N+\\
N=N-\\
\end{array}$$

$$NH_2 \qquad (IV)_{13}$$

$$H_3C \longrightarrow N+ N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+N=N-CH_3 \\
CH_3
\end{array}$$
(IV)₁₇

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$$\begin{array}{c|c} & & \text{CH}_3 & & \text{CH}_3 \\ \hline & & & \\ \hline & & \\ \hline$$

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$CI$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₂₃

$$\begin{array}{c|c}
 & CH_3 \\
 & N+N=N \\
 & O^{-}
\end{array}$$
(IV)₂₄

$$N=N \xrightarrow{CH_3} (IV)_{25}$$

$$\downarrow N+$$

$$\downarrow -$$

$$\begin{array}{c|c} & CH_3 \\ \downarrow \\ CH_3 \\ CH_3SO_4^- \end{array}$$
 (IV)₂₇

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ CH_{3} \\ CH_{3} \\ CH_{3}SO_{4}^{-} \end{array}$$

$$\begin{array}{c} CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \\ \end{array} \qquad (IV)_{30}$$

$$\begin{array}{c|c} & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $N=N$ 
 $N=N$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c}
 & \text{NHCOCH}_3 \\
 & \text{NHCOCH}_3 \\
 & \text{CH}_3 \\$$

$$N=N - CH_3 CH_3 CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3 CH_3 CH_3 CH_3$$

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$$N=N - CH_3$$

$$CH_3 CO_4$$

$$CH_3$$

$$CH_3 CO_4$$

$$CH_3$$

$$CH_3 CO_4$$

$$N=N \xrightarrow{H_3C} NCH_3$$

$$C_2H_5SO_4$$

$$C_2H_5$$

$$C_2H_5$$

$$\begin{array}{c|c}
CI \\
N=N & CH_3 \\
CH_3 & CH_3SO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3 & CH_3
\end{array}$$

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FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L.L.P. 1300 I STREET, N. W. WASHINGTON, D. C. 20005 202-408-4000

NHCOCH₃

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$CH_3$$

$$\begin{array}{c} H_3C \\ \hline \\ N=N \\ \hline \\ C_4H_9 \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \end{array}$$

$$CH_3$$

$$CH_3 SO_4$$

$$CH_3 SO_4$$

$$CH_5$$

$$CH_5$$

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$$\begin{array}{c|c} S & CH_3 \\ \hline \\ CH_3 & CIO_4 \end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N \\
CH_3 \\
CIO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline \\ N+ N=N \\ \hline \\ CH_3 & I \end{array} \qquad \begin{array}{c} CH_3 \\ \hline \\ NH_2 \end{array} \qquad \qquad (IV)_{49}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $(IV)_{50}$ 

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$$\begin{array}{c|c}
 & S \\
 & N+N=N \\
 & CI \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & O \\
 & NH
\end{array}$$

$$\begin{array}{c|c}
 & (IV)_{51}
\end{array}$$

$$N + N = N - NH_2$$

$$OCH_3$$
(IV)₅₃

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$$N+N=N$$
 $O-N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+N=N$$
 $CH_3$ 
 $OH$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$N+N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N+N=N \longrightarrow OH$$

$$O-N$$

$$(IV)_{62}$$

$$O_2N$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
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$$CH_3$$
 $N=N$ 
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$$\begin{array}{c|c} & NH_2 \\ \hline N+ & N=N \\ \hline \\ O- & CH_3 \end{array}$$
 (IV)₇₀

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c|c}
 & O \\
 &$$

$$N=N-\sqrt{N+2}$$

$$V=N-\sqrt{N+2}$$

$$V=N+\sqrt{N+2}$$

$$V=N$$

$$N=N - CH_{2}CH_{2}OH$$

$$CH_{2}CH_{2}OH$$

$$CH_{3}CH_{3}SO_{4}$$

$$(IV)_{73}$$

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$$N = N \longrightarrow NH_{2}$$

$$\downarrow N+ \qquad NH_{2}$$

$$\downarrow CH_{3} \qquad CH_{3}SO_{4} \qquad (IV)_{74}$$

$$N=N \longrightarrow NH_{2}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$(IV)_{75}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $NH_2$ 
 $CH_3$ 
 $(IV)_{76}$ 

$$\begin{array}{c|c}
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3 \\
 & \text{CH}_3
\end{array}$$

$$(IV)_{77}$$

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- wherein said at least one thickening polymer is chosen from:

nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)  $C_{16}$ - $C_{18}$  alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride; and

- wherein said second composition comprises at least one oxidizing agent chosen from: hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes.

A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,

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- wherein said first composition comprises at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), (III') and (IV) below and at least one oxidation base;
- (a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R_1 \\ R_2 \end{pmatrix} - \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH $_2$  radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

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A is chosen from structures  $A_1$  to  $A_{19}$  below:

and

in which:

 $R_4$  is chosen from  $C_1\text{-}C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $R_{\scriptscriptstyle 5}$  is chosen from  $C_{\scriptscriptstyle 1}\text{-}C_{\scriptscriptstyle 4}$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

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$$B-N=N \xrightarrow{R_8} N_{R_7}$$

$$X \xrightarrow{R_9} N_{R_7}$$

$$(II)$$

in which:

R₆ is chosen from a hydrogen atom and C₁-C₄ alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X is chosen from anions,

B is chosen from structures  $B_1$  to  $B_6$  below:

$$R_{10}$$
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{10}$ 
 $R_{11}$ 
 $R_{12}$ 
 $R_{12}$ 
 $R_{13}$ 
 $R_{14}$ 
 $R_{15}$ 
 $R$ 

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$$R_{10}$$
 $R_{10}$ 
 $R$ 

in which:

 $R_{10}$  is chosen from  $C_1$ - $C_4$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

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$$E-D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$X - R_{16} - R_{16}$$
(III)

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

R₁₅ is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1\text{-}C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

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X⁻ is chosen from anions,

E is chosen from structures  $E_1$  to  $E_8$  below:

and

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in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

wherein when m = 0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_1$  to  $G_3$  below:

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in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

 $R_{19}$  is chosen from  $C_1$ - $C_4$  radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

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together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

K is chosen from a -CH radical, -C(C₁-C₄ alkyl) radicals and -N ⁺R₂₂(X⁻), radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)$ , radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an  $O^-$  anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an -NO₂ radical;

X is chosen from anions;

wherein if R₂₂ is O⁻, r is zero;

wherein if K or P or M is  $C_1 C_4 - N^+$ -alkyl  $X^-$ , either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is  $-N^+R_{22}(X^-)_r$ , M and P are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

wherein if M denotes -N $^{+}$ R₂₂( $X_{-}$ )_r, K and P are the same and are chosen from a -CH radical and -C( $C_1$ - $C_4$  alkyl) radicals;

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if P is -N  $^{+}R_{22}(X^{-})_r$ , K and M are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a radical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

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 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

 $R_{28}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals,  $C_2$ - $C_4$  polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain.

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- wherein said first composition comprises at least one cationic direct dye and at least one oxidation base,
  - wherein said at least one cationic direct dye is chosen from:

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$$CH_3$$
 $N = N$ 
 $N = N$ 
 $CH_3$ 
 $CI^ CH_3$ 
 $CI^ CH_3$ 

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH$ 
 $CH$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=CH C_2H_4CN$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 
 $C_2$ 
 $C_3$ 
 $C_4$ 
 $C_4$ 
 $C_5$ 
 $C_5$ 
 $C_5$ 
 $C_6$ 
 $C_7$ 
 $C_8$ 
 $C_8$ 

$$HO-H_4C_2-N+$$
 $CH=CH CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI^{-}$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (I9)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (I9)$$

$$N = N - NH_2 \qquad CI \qquad (I10)$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $OCH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c} CH_3 \\ N+ \\ N=N \end{array} \qquad \begin{array}{c|c} C_2H_5 \\ C_2H_5 \end{array} \qquad CI \qquad (I12)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (I12)$$

$$\begin{array}{c} CH_3 \\ N+ \\ N=N \end{array} \qquad \begin{array}{c} C_2H_4\text{-CN} \\ C_2H_4\text{-CN} \end{array} \qquad \text{(I13)}$$

$$CH_3 \qquad CH_3 \qquad CH_4 - CN \qquad CH_3 \qquad CH_4 - CN \qquad CH_5 \qquad C$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
CH_3
\end{array}$$
CI (I15)

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-$$

$$N=N-$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_2H_5$ 

$$CH_3$$
 $N$ 
 $N=N$ 
 $C_2H_5$ 
 $CH_3$ 
 $CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CI$ 

$$CH_3$$
 $N = N$ 
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

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$$CH_3$$
 $N=N N=N CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline \\ CH_3 \\ \hline \\ CH_3 \end{array} \qquad CI \qquad (I24)$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
NH_2
\end{array}$$
CI (126)

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & S \\
 & CH_2-CH_2-CN \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_2-CH_2-CN \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $N=N CH_3$ 
 $CH_3$ 
(130)

$$CH_3$$
 $N=N-NH-NH_2$ 
 $CH_3$ 
 $CH_3$ 

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$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N=N$   $CH_3$   $C$ 

$$H_3C-O$$
 $N=N+$ 
 $N=N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N = N - NH_2 \qquad CI \qquad (I36)$$

$$N = N + CH_3 \qquad CI$$

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$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-O N=N+$$
 $N=N N=N CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
S \\
N \\
N \\
CH_3
\end{array}$$

$$\begin{array}{c}
CH_3 \\
CH_3
\end{array}$$

$$CI^{-} \quad (140)$$

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$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CH_3 \\ \hline \\ N+ \\ CH_3 \end{array}$$

$$N = N - \begin{array}{c} \\ \\ \\ \\ \end{array}$$

$$NH \qquad CI \qquad (143)$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

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$$\begin{array}{c|c}
CH_3 \\
N+\\
N=N-\\
CH_3
\end{array}$$

$$CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$\begin{array}{c|c}
 & C_2H_5 \\
\hline
 & N+ \\
\hline
 & N=N \\
\hline
 & CH_3 \\
\hline
 & CH_3SO_4 \\
\hline
 & CH_3SO_4
\end{array}$$
(149)

$$N+$$
 $N=$ 
 $N$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CH_3$ 

$$CH_3$$
  $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$   $O-CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N+$   $N=N CH_3$   $CI^ (II3)$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$\begin{array}{c|c}
S \\
CH = N - N - CH_3
\end{array}$$
CI (III1)

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$$H_3C$$
 $N+$ 
 $CH=N-N$ 
 $CH=N$ 
 $CH=N$ 

$$H_3C$$
 $N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $CI$ 
 $CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 
 $CH_3$ 

$$H_3C-N+$$
  $CH=N-N$   $CH_3SO_4$  (III6)

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $CI$ 
 $CI$ 
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 $CI$ 

$$\begin{array}{c|c} & CH=N-N-CH_3 \\ \hline CH_3 \\ \hline CH_3 \\ \end{array} \qquad \begin{array}{c} CH_3SO_4 \\ \hline \end{array} \qquad \begin{array}{c} (III10) \\ \hline \end{array}$$

$$CH=N-N$$
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$CH=CH$$
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
  $CH=CH NH_2$   $CH_3COO^-$  (III16)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$  (III17)

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

534

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$$N+ N=N - CH_3 CH_3$$
 (IV)₁

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$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\$$

$$N+N=N-N-CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N-N+2$$

$$(IV)_5$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$N+N=N$$
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c}
CH_3 \\
N+\\
N-\\
N-\\
CH_2CH_2OH
\end{array}$$

$$\begin{array}{c}
CH_2CH_2OH \\
CH_2CH_2OH
\end{array}$$

$$\begin{array}{c}
(IV)_{12}
\end{array}$$

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$$\begin{array}{c}
CH_3 \\
N+\\
N=N-\\
\end{array}$$

$$\begin{array}{c}
-NH_2 \\
\end{array}$$
(IV)₁₃

$$H_3C \longrightarrow N+N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c} CI \\ N+ \\ N- \\ N- \\ \end{array} N = N - \begin{array}{c} CH_3 \\ CH_3 \end{array}$$
 (IV)₁₆

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & O-
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

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$$\begin{array}{c|c} & & \text{CH}_3 \\ & & \text{N} + \text{N} = \text{N} \\ & & \text{CH}_3 \\ & & \text{CH}_3 \end{array}$$
 (IV)₁₈

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N \\ \hline & & \\ O- & & \\ \end{array} \begin{array}{c} & & \\ CH_3 \\ CH_3 \end{array} \tag{IV)}_{19}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N-C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline \\ C_2H_5 & \\ \end{array}$$
 (IV)₂₂

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \longrightarrow \begin{array}{c} CH_3 \\ CH_3 \end{array} \qquad (IV)_{23}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & O^{-}
\end{array}$$
(IV)₂₄

$$N=N - CH_3 CH_3 CH_3$$

$$N=N \xrightarrow{\text{CH}_2\text{CH}_2\text{OH}} \text{(IV)}_{26}$$

$$N+\frac{1}{2}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3SO_4^-
\end{array}$$
(IV)_{z7}

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$\begin{array}{c} CH_{3} \\ N+ \\ CH_{3} \\ CH_{3}SO_{4} \end{array} \qquad \begin{array}{c} CH_{2}CH_{2}OH \\ CH_{2}CH_{2}OH \\ \end{array} \qquad \qquad (IV)_{30}$$

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_{3}$$

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $N=N$ 
 $N=N$ 

$$\begin{array}{c|c} H_3C \\ \hline N+ \\ CH_3 \\ \hline CH_3SO_4^- \end{array} \qquad (IV)_{35}$$

$$\begin{array}{c|c} & & \text{NHCOCH}_3 \\ \hline \text{N+} & \text{N=N} & & \text{CH}_3 \\ \hline \text{CH}_3 & & \text{CH}_3 \\ \hline \text{CH}_3 & & \text{CH}_3 \\ \end{array}$$

$$N=N - CH_3 CH_3 CH_3 CH_3 CH_3$$

$$CH_3 CH_3 CH_3 CH_3 CH_3 CH_3$$

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$$\begin{array}{c|c}
CI & CH_3 \\
N+ & CH_3SO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 & (IV)_{40}
\end{array}$$

Finnegan, Henderson, Farabow, Garrett, & Dunner, L. L. P.

1300 I STREET, N. W.
WASHINGTON, D. C. 20005

NHCOCH₃

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$\begin{array}{c} H_3C \\ N=N \\ \hline \\ N_+ \\ C_4H_9 \end{array}$$

$$\begin{array}{c} CH_3 \\ CH_3 \\ \end{array}$$

$$(IV)_{43}$$

$$\begin{array}{c|c} CH_3 \\ N+N=N \\ OCH_3 \\ CH_3SO_4 \\ \end{array} \begin{array}{c} CH_5 \\ \end{array}$$

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$$\begin{array}{c|c} S & CH_3 \\ \hline \\ CH_3 & CIO_4 \end{array}$$

$$\begin{array}{c|c} CH_3 & CIV_{46} \\ \hline \end{array}$$

FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L. L. P. 1300 I STREET, N. W. WASHINGTON, D. C. 20005

202-408-4000

$$\begin{array}{c|c}
CH_3 \\
N+N=N-CIO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c} S & CH_3 \\ \hline \\ N+ & N=N \\ \hline \\ CH_3 & 1 & NH_2 \end{array}$$
 (IV)₄₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $OH$ 

LAW OFFICES

FINNECAN, HENDERSON, FARABOW, CARRETT, & DUNNER, L. L. P. 1300 I STREET, N. W. WASHINGTON, D. C. 20005 202-408-4000

$$\begin{array}{c|c}
 & S \\
 & N+ \\
 & N=N \\
 & CI \\
 & OH
\end{array}$$

$$\begin{array}{c|c}
 & O \\
 & NH \\
 & OH$$

$$\begin{array}{c|c}
 & (IV)_{51} \\
 & OH
\end{array}$$

$$N+N=N-N+2$$

$$OCH_3$$
(IV)₅₃

$$\begin{array}{c|c} & & & \\ & & & \\ N+ & N=N & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

LAW OFFICES

FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L. L. P. 1300 I STREET, N. W. WASHINGTON, D. C. 20005 202-408-4000

$$\begin{array}{c|c} & & & \\ & & \\ N+ & N=N \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$CH_3$$
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$$N+$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $(IV)_{58}$ 

$$N+$$
 $N=N$ 
 $CH_3$ 
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FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L. L. P. 1300 I STREET, N. W. WASHINGTON, D. C. 20005 202-408-4000

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 $CH_3$ 

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & CH_3 \\ \hline N+ & CH_3 \\ \hline CH_3 & CH_3SO_4 \end{array}$$

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$$\begin{array}{c|c}
 & O \\
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$$\begin{array}{c|c}
 & NH_2 \\
 & NH_2 \\
 & CH_3
\end{array}$$
(IV)₇₀

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$$N = N - NH_2$$

$$V = N - NH_2$$

$$N=N - CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_3CH_3OH$$

$$CH_3SO_4$$

$$CH_3SO_4$$

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$$N = N - NH_{2}$$

$$N = N - NH_{2}$$

$$CH_{3} CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N=N \xrightarrow{\text{CH}_3} NH_2$$

$$\downarrow N+ \\ \downarrow CH_3 SO_4 \qquad NH_2 \qquad (IV)_{75}$$

$$CH_3$$
 $N+N=N-NH_2$ 
 $NH_2$ 
 $CH_3$ 
 $NH_2$ 

$$N=N$$
 $CH_3$ 
 $C$ 

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wherein said at least one oxidation base is chosen from:
 para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols,
 ortho-aminophenols and heterocyclic bases;

- wherein said second composition comprises at least one oxidizing agent and at least one thickening polymer,
- wherein said at least one oxidizing agent is chosen from: hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes, and
  - wherein at least one thickening polymer is chosen from:

nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO)  $C_{16}$ - $C_{18}$  alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

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cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride.

104. A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,

- wherein said first composition comprises:

at least one cationic direct dye chosen from compounds of formulae (I), (II), (III), and (IV) below, at least one thickening polymer; and at least one oxidation base;

(a) wherein said compounds of formula (I) are chosen from compounds of formula:

$$A - D = D - \begin{pmatrix} R'_3 \\ R_3 \end{pmatrix} - N \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
 (I)

in which:

D is chosen from a nitrogen atom and a -CH group,

 $R_1$  and  $R_2$ , which may be identical or different, are chosen from a hydrogen atom; a 4'-aminophenyl radical; and  $C_1$ - $C_4$  alkyl radicals which can optionally be substituted with a radical chosen from -CN, -OH and -NH₂ radicals or form, with each other or a carbon atom of the benzene ring of formula (I), a heterocycle optionally containing a

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heteroatom chosen from oxygen and nitrogen, which can be substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals;

 $R_3$  and  $R'_3$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms, a cyano radical,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and acetyloxy radicals,

X⁻ is chosen from anions,

A is chosen from structures  $A_1$  to  $A_{19}$  below:

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and

in which:

 $R_4$  is chosen from  $C_1\text{-}C_4$  alkyl radicals which can be substituted with a hydroxyl radical, and

 $R_5$  is chosen from  $C_1$ - $C_4$  alkoxy radicals, and

wherein when D represents -CH, when A represents  $A_4$  or  $A_{13}$  and when  $R_3$  is not an alkoxy radical,  $R_1$  and  $R_2$  are not both a hydrogen atom;

**(b)** wherein said compounds of formula (II) are chosen from compounds of formula:

$$B-N=N$$

$$X$$

$$R_{9}$$

$$R_{7}$$

$$(II)$$

in which:

 $R_6$  is chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals,

 $R_7$  is chosen from a hydrogen atom, alkyl radicals which can be substituted with a species chosen from a -CN radical and an amino group, and a 4'-aminophenyl radical, or forms, with  $R_6$ , a heterocycle optionally comprising at least one heteroatom chosen from oxygen and nitrogen, which can be substituted with  $C_1$ - $C_4$  alkyl radicals,

 $R_8$  and  $R_9$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms,  $C_1$ - $C_4$  alkyl radicals  $C_1$ - $C_4$  alkoxy radicals and a -CN radical,

X is chosen from anions,

B is chosen from structures B₁ to B₆ below:

$$R_{10}$$
 $R_{10}$ 
 $R$ 

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in which:

 $R_{10}$  is chosen from  $C_1\text{-}C_4$  alkyl radicals, and

 $R_{11}$  and  $R_{12}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals;

(c) wherein said compounds of formulae (III) and (III') are chosen from compounds of formulae:

$$E-D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X - R_{15} - R_{13}$$

$$X - R_{16} - R_{16}$$
(III)

in which:

 $R_{13}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkoxy radicals, halogen atoms and an amino radical,

 $R_{14}$  is chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals or forms, with a carbon atom of the benzene ring, a heterocycle optionally containing an oxygen heteroatom and/or substituted with at least one to radical chosen from  $C_1$ - $C_4$  alkyl radicals,

 $R_{15}$  is chosen from a hydrogen atom and halogen atoms,

 $R_{16}$  and  $R_{17}$ , which may be identical or different, are chosen from a hydrogen atom and  $C_1$ - $C_4$  alkyl radicals,

 $D_1$  and  $D_2$ , which may be identical or different, are chosen from a nitrogen atom and a -CH group,

m = 0 or 1,

wherein when  $R_{13}$  is an unsubstituted amino group,  $D_1$  and  $D_2$  are both a -CH group and m=0,

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X is chosen from anions,

E is chosen from structures  $E_1$  to  $E_8$  below:

**E**1

and

560

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in which R' is chosen from  $C_1$ - $C_4$  alkyl radicals;

wherein when m=0 and when  $D_1$  represents a nitrogen atom, E can be further chosen from structure E9 below:

in which R' is chosen from C₁-C₄ alkyl radicals;

(d) wherein said compounds of formula (IV) are chosen from compounds of formula:

$$G - N = N - J \qquad (IV)$$

in which:

G is chosen from structures  $G_{\scriptscriptstyle 1}$  to  $G_{\scriptscriptstyle 3}$  below:

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in which:

 $R_{18}$  is chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical which can optionally be substituted with  $C_1$ - $C_4$  alkyl radicals or a halogen atom chosen from chlorine, bromine, iodine and fluorine;

 $R_{19}$  is chosen from  $C_1$ - $C_4$  radicals and a phenyl radical;

 $R_{20}$  and  $R_{21}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals and a phenyl radical, or

together form, in  $G_1$ , a benzene ring substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals, or

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together form, in  $G_2$ , a benzene ring optionally substituted with at least one radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and  $NO_2$  radicals;

R₂₀ can be further chosen from a hydrogen atom;

Z is chosen from an oxygen atom, a sulphur atom and -NR₁₉ radicals;

M is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N⁺R₂₂(X-), radicals;

K is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)_r$  radicals;

P is chosen from a -CH radical, -C( $C_1$ - $C_4$  alkyl) radicals and -N  $^+R_{22}(X^-)$ , radicals;

wherein r denotes zero or 1;

wherein  $R_{22}$  is chosen from an O⁻ anion,  $C_1$ - $C_4$  alkoxy radicals, and  $C_1$ - $C_4$  alkyl radicals;

 $R_{23}$  and  $R_{24}$ , which may be identical or different, are chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals and an - $NO_2$  radical;

X⁻ is chosen from anions;

wherein if R₂₂ is O⁻, r is zero;

wherein if K or P or M is  $C_1 C_4 - N^+$ -alkyl  $X^-$ , either  $R_{23}$  or  $R_{24}$  is not a hydrogen atom;

wherein if K is  $-N^+R_{22}(X^-)_r$ , M and P are the same and are chosen from a -CH radical and  $-C(C_1-C_4 \text{ alkyl})$  radicals;

wherein if M denotes -N $^+$ R $_{22}(X^-)_r$ , K and P are the same and are chosen from a -CH radical and -C(C $_1$ -C $_4$  alkyl) radicals;

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if P is -N  $^+R_{22}(X^-)_r$ , K and M are the same and are chosen from a -CH radical and -C(C₁-C₄ alkyl) radicals;

if Z is a sulphur atom with  $R_{21}$  being a radical chosen from  $C_1$ - $C_4$  alkyl radicals,  $R_{20}$  is not a hydrogen atom;

if Z is -NR₂₂ with R₁₉ being a hadical chosen from C₁-C₄ alkyl radicals, at least one of the radicals R₁₈, R₂₀ and R₂₁ of G₂ is not chosen from C₁-C₄ alkyl radicals;

J is chosen from:

(1) radicals chosen from structure J₁ below:

in which:

 $R_{25}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals, an -OH radical, an -NO $_2$  radical, -NHR $_{28}$  radicals, -NR $_{29}$ R $_{30}$  radicals, -NHCO ( $C_1$ - $C_4$ ) alkyl radicals, or forms, with  $R_{26}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

 $R_{26}$  is chosen from a hydrogen atom, halogen atoms chosen from chlorine, bromine, iodine and fluorine,  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  alkoxy radicals or forms, with  $R_{27}$  or  $R_{28}$ , a 5- or 6-membered ring optionally containing at least one heteroatom chosen from nitrogen, oxygen and sulphur;

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 $R_{27}$  is chosen from a hydrogen atom, an -OH radical, -NHR $_{28}$  radicals and -NR $_{29}$ R $_{30}$  radicals;

R₂₈ is chosen from a hydrogen atom, C₁-C₄ alkyl radicals, C₁-C₄ monohydroxyalkyl radicals, C₂-C₄ polyhydroxyalkyl radicals and a phenyl radical;

 $R_{29}$  and  $R_{30}$ , which may be identical or different, are chosen from  $C_1$ - $C_4$  alkyl radicals,  $C_1$ - $C_4$  monohydroxyalkyl radicals and  $C_2$ - $C_4$  polyhydroxyalkyl radicals;

- (2) 5- and 6-membered nitrogenous heterocyclic groups optionally containing other heteroatoms and/or carbonyl groups and optionally substituted with at least one radical chosen from C₁-C₄ alkyl radicals, an amino radical, a phenyl radical, and
- wherein said at least one thickening polymer is chosen from polymers comprising:
  - (ii)₁ nonionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain;
  - (ii)₂ anionic amphiphilic polymers, comprising: at least one hydrophilic unit and at least one unit comprising a fatty chain; and
  - (ii)₃ cationic amphiphilic polymers, comprising at least one hydrophilic unit and at least one unit comprising a fatty chain; and
- wherein said second composition comprises at least one oxidizing agent.
- 105. A multi-compartment dyeing kit, comprising at least two separate compartments, wherein a first compartment contains a first composition and a second compartment contains a second composition,

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- wherein said first composition comprises at least one cationic direct dye, at least one oxidation base, and at least one thickening polymer,
  - wherein said at least one cationic direct dye is chosen from:

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$$N + CH_3$$
 $N = N - CH_3$ 
 $N = N -$ 

$$CH_3$$
 $N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH$ 
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 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C-N+$$
 $CH=CH C_2H_4CN$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 
 $C_3$ 
 $C_4$ 
 $C_5$ 
 $C_4$ 
 $C_5$ 
 $C_7$ 
 $C_8$ 
 $C_8$ 

$$HO-H_4C_2-N+$$
 $CH=CH CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=CH CH_3$ 
 $CI^{-}$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=$ 
 $N=$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (19)$$

$$N \xrightarrow{N+} N = N \xrightarrow{N+} NH_2 \qquad CI \qquad (I10)$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $OCH_3$ 
 $OCH_3$ 

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$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
C_2H_5
\end{array}$$

$$C_2H_5$$

$$C_2H_5$$

$$CH_3$$

$$CH_3$$

$$CH_3$$
 $N+$ 
 $N=N C_2H_4-CN$ 
 $C_2H_4-CN$ 
 $C_2H_4-CN$ 
 $C_2H_4-CN$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-$$

$$N=N-$$

$$CH_3$$

$$CH_$$

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $N=N$ 
 $C_2H_5$ 
 $C_1$ 
 $C_1$ 
 $C_2$ 

$$CH_3$$
 $N = N$ 
 $C_2H_5$ 
 $CH_3$ 
 $C_2H_5$ 

$$CH_3$$
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $NH_2$ 
 $CH_3$ 

$$CH_3$$
 $N$ 
 $N=N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $OH$ 
 $CH_3$ 

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$$CH_3$$
 $N = N$ 
 $CI$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 

$$CH_3 \qquad CI \qquad (124)$$

$$CH_3 \qquad CI$$

$$CH_3$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
NH_2
\end{array}$$
CI (126)

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$$CH_3$$
 $N+$ 
 $CH_2$ - $CH_2$ - $CN$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N = N - NH - NH_2$ 
 $CI^-$  (I31)
 $CH_3$ 

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$$N = N - NH_2 \qquad CI^- \qquad (I32)$$

$$N = N + CH_3$$

$$N=N$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
  $N=N$   $N=N$   $CH_3$   $CH$ 

$$N = N - NH_2 \qquad CI \qquad (I36)$$

$$CH_3 \qquad CI$$

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$$N = N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-O N=N+$$
 $N=N N=N O-CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$H_3C$$
 $N+$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
S \\
N+\\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CI^- & (140)
\end{array}$$

$$N = N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$N = N$$
 $N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$N=N-\\
N+\\
CI^{-} (143)$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3 \\
 & CH_3
\end{array}$$
CI (144)

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$C_2H_5$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$  (149)

$$CH_3$$
 $N+$ 
 $N=N$ 
 $CI$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+$ 
 $N=N O-CH_3$ 
 $CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 
 $O-CH_3$ 

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$$N^{N+}$$
 $N = N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_2-CH_2-CN \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_2-CH_2-CN \\
 & CH_3
\end{array}$$

$$H_3C$$
 $N+-S$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$CH_3$$
  $N=N$ 
 $CH_3$ 
 $C$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$  (II5)

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and

$$N \cdot N + N = N - N \cdot CH_3$$
 $CH_3 \cdot CH_3 \cdot$ 

$$CH_3$$

$$CH = N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

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$$H_3C$$
 $O$ 
 $CH=N-N$ 
 $CH=N$ 
 $CH=N$ 

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CH_3SO_4$  (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$ 
 $(IIII5)$ 

$$CH_3$$
 $CH_3$ 
 $CH_3$ 

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$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CI$  (III8)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI$   $CI$  (III9)

$$CH=N-N$$
 $CH_3SO_4$  (III11)

$$CH = N - N - CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$ 
 $CH_3SO_4$  (III13)

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$$CH_3$$
 $N=N$ 
 $OCH_3$ 
 $CI$  (III14)

$$H_3C-N+$$
 $CH=N-N$ 
 $CH_3$ 
 $CI^-$  (III17)

$$CI$$
 $N=N$ 
 $H_3C$ 
 $N+$ 
 $CH_3$ 
 $CI$ 
 $(III18)$ 

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$$CH_3-N+$$
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 
 $CH=CH$ 

$$N+N=N-CH_3$$

$$CH_3$$

$$CH_3$$

$$N = N \longrightarrow OH \qquad (IV)_2$$

$$\begin{array}{c|c} & \text{NHCOCH}_3 \\ \hline \\ N+ & N=N \end{array} \begin{array}{c} & \text{CH}_3 \\ \hline \\ CH_3 \end{array}$$
 (IV)₃

$$N+N=N-CH_2CH_2OH CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$CH_2CH_2OH$$

$$N+N=N-N+2$$

$$(IV)_5$$

$$N+N=N-N-N$$

$$(IV)_6$$

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$$H_3C$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & V + V = N \\
 & CH_3 \\
 & CH_3
\end{array}$$
(IV)₁₀

$$\begin{array}{c}
CH_{3} \\
N+ \\
N=N \\
- \\
C_{2}H_{5}
\end{array}$$
(IV)₁₁

$$N+N=N$$
 $N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 

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$$\begin{array}{c}
CH_3 \\
N+\\
N=N
\end{array}$$

$$\begin{array}{c}
-NH_2 \\
\end{array}$$

$$\begin{array}{c}
(IV)_{13} \\
\end{array}$$

$$H_3C \longrightarrow N+N=N \longrightarrow NH_2 \qquad (IV)_{14}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} CI & CH_3 \\ \hline \\ O^- & CH_3 \end{array} \qquad (IV)_{16}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

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$$N+$$
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$\begin{array}{c|c} & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} & CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₁₉

$$CH_3$$
 $N+N=N$ 
 $C_2H_5$ 
 $C_2H_5$ 
 $C_2H_5$ 

$$\begin{array}{c|c} CI & & \\ N+ & N=N & \\ \hline \\ O^{-} & & \\ \end{array} \qquad \begin{array}{c} C_2H_5 \\ \hline \\ C_2H_5 \end{array} \qquad \qquad \text{(IV)}_{22}$$

$$\begin{array}{c|c} CI & H_3C \\ \hline N+ & N=N \end{array} \begin{array}{c} CH_3 \\ \hline CH_3 \end{array}$$
 (IV)₂₃

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$$\begin{array}{c|c}
 & CH_3 \\
 & N+ \\
 & N=N \\
 & O^{-}
\end{array}$$
(IV)₂₄

$$N=N - CH_3 CH_3 CH_3$$

$$\downarrow O$$

$$N=N \xrightarrow{\text{CH}_2\text{CH}_2\text{OH}} \text{(IV)}_{26}$$

$$V = N \xrightarrow{\text{CH}_2\text{CH}_2\text{OH}} \text{(IV)}_{26}$$

$$\begin{array}{c|c} & CH_3 \\ \downarrow \\ CH_3 \\ CH_3SO_4^- \end{array}$$

$$\begin{array}{c|c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

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$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$CH_3$$
 $N+N=N$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c} & & & \\ & N+ & N=N & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3SO_4$ 

$$CH_{3}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

$$CH_{3}SO_{4}$$

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$$H_{3}C \longrightarrow N+ N=N \longrightarrow N \longrightarrow H$$

$$CH_{3}SO_{4}^{-}$$

$$CH_{3}SO_{4}^{-}$$

$$(IV)_{34}$$

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 
 $CH_3SO_4$ 

$$\begin{array}{c|c}
 & \text{NHCOCH}_3 \\
 & \text{NHCOCH}_3 \\
 & \text{CH}_3 \\$$

$$N=N - CH_3$$

$$CH_3$$

$$CH_3SO_4$$

$$CH_3$$

$$CH_3$$

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CI \\
N=N \\
CH_3
\end{array}$$

$$\begin{array}{c}
CH_3 \\
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Finnegan, Henderson, Farabow, Garrett, & Dunner, L.L.P. 1300 I STREET, N. W. WASHINGTON, D. C. 20005 202-408-4000

$$N=N \xrightarrow{N+COCH_3} CH_3$$

$$C_2H_5SO_4$$

$$C_2H_5$$

$$C_2H_5$$

$$C_2H_5$$

$$C_3$$

$$C_4$$

$$C_4$$

$$C_5$$

$$C_7$$

$$C_8$$

$$\begin{array}{c|c}
 & H_3C \\
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

$$\begin{array}{c|c} & CH_3 \\ \hline N+N=N-N \\ \hline OCH_3 \\ CH_3SO_4 \\ \end{array}$$

$$\begin{array}{c|c} CH_3 \\ \hline C_6H_5 \\ \end{array}$$

$$\begin{array}{c|c} (IV)_{44} \\ \hline \end{array}$$

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$$\begin{array}{c|c}
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 & N+ \\
 & N=N \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3
\end{array}$$

$$\begin{array}{c|c}
 & CH_3
\end{array}$$

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$$\begin{array}{c|c}
CH_3 \\
N+N=N-CIO_4
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
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$$\begin{array}{c|c} S & CH_3 \\ \hline N+ N=N & -NH_2 \\ \hline CH_3 & NH_2 \end{array}$$
 (IV)₄₉

$$H_3C$$
 $N+$ 
 $N=N$ 
 $CIO_4$ 
 $OH$ 
 $OH$ 
 $(IV)_{50}$ 

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$$\begin{array}{c|c}
S & O \\
N+N=N & OH
\end{array}$$

$$\begin{array}{c|c}
CH_3 & CI & OH
\end{array}$$

$$\begin{array}{c|c}
CH_3 & CI & OH
\end{array}$$

$$\begin{array}{c|c}
CH_3 & CI & OH
\end{array}$$

$$N+N=N \longrightarrow NH_2$$

$$OCH_3$$
(IV)₅₃

$$\begin{array}{c|c} CH_3 \\ N+ N=N \\ OCH_3 \\ CIO_4 \\ NH_2 \end{array}$$
 (IV)₅₅

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202-408-4000



$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
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$$N+N=N$$
 $O+O$ 
 $O+$ 

$$N+N=N$$
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 $CH_3$ 

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$$N+N=N-N$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$N+N=N \longrightarrow OH$$

$$O$$

$$(IV)_{62}$$

$$O_2N$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$N+$$
 $N=N$ 
 $CH_3$ 
 $CH_3SO_4$ 
 $NO_2$ 
 $CH_3$ 

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$$H_3C$$
 $N+$ 
 $N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

$$CH_3$$
 $N+N=N$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

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$$NH_{2}$$

$$N=N$$

$$V=NH_{2}$$

$$CH_{3}$$

$$(IV)_{70}$$

$$\begin{array}{c|c}
 & O \\
 & N \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 & N \\
 & O
\end{array}$$

$$\begin{array}{c}
 & O \\
 &$$

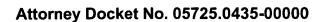
$$N = N - NH_2$$

$$V = N - NH_2$$

$$N=N$$
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_2CH_2OH$ 
 $CH_3CH_3OH$ 
 $CH_3CH_3OH$ 

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$$N = N$$

$$N = N$$

$$NH_{2}$$

$$CH_{3}SO_{4}$$

$$(IV)_{74}$$

$$N = N \longrightarrow NH_{2}$$

$$CH_{3} CH_{3}SO_{4} CH_{3}SO_{4} (IV)_{75}$$

$$CH_3$$
 $N+N=N-N+1$ 
 $NH_2$ 
 $CH_3$ 
 $NH_2$ 
 $NH_2$ 

$$\begin{array}{c|c}
 & CH_3 \\
 & CH_3 \\
 & CH_3 \\
 & CH_3 \\
 & CH_3
\end{array}$$
(IV)₇₇

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- wherein said at least one oxidation base is chosen from:
   para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols,
   ortho-aminophenols and heterocyclic bases;
- nonionic amphiphilic polymers chosen from: polyethylene glycol (15) nonylphenyl ether; cetyl hydroxyethylcellulose, copolymers of vinylpyrrolidone/hexadecene, vinylpyrrolidone/eicosene, copolymers of oxyethylenated methyl methacrylate/stearyl acrylate, diurethane (HMD) of oxyethylenated (66 EO) and oxypropylenated (14 PO) C₁₆-C₁₈ alcohols, and polyethylene glycol methacrylate/lauryl methacrylate;

wherein said at least one thickening polymer is chosen from:

anionic amphiphilic polymers chosen from: crosslinked terpolymers of methacrylic acid, of ethyl acrylate and of Steareth-10 allyl ether; crosslinked terpolymers of methacrylic acid/ethlacrylate/steareth 10 allyl ether; polymers of acrylic acid and of lauryl methacrylate; polymers formed from a mixture of acrylic acid and lauryl methacrylate monomers; and crosspolymers of acrylates/C10-30 alkyl acrylates and crosspolymers of acrylic acid/C₁₀-C₃₀ alkyl acrylate;

cationic amphiphilic polymers chosen from: polyquarternium-24, PG-hydroxyethylcellulose lauryldiammonium chloride, PG-hydroxyethylcellulose cocodiammonium chloride, and PG-hydroxyethylcellulose stearyldiammonium chloride; and

wherein said second composition comprises at least one oxidizing agent chosen
 from hydrogen peroxide, urea peroxide, alkali metal bromates, persalts, and enzymes.

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106. The composition according to claim 1, wherein said J is chosen from 5and 6-membered nitrogenous heterocyclic groups chosen from structure J₂ below:

$$P_{31}$$
 $(Y)-N$ 
 $(U)_{n}$ 
 $I_{2}$ 
 $R_{32}$ 

in which:

 $R_{31}$  and  $R_{32}$ , which may be identical or different, are chosen from a hydrogen atom,  $C_1$ - $C_4$  alkyl radicals and a phenyl radical;

Y is chosen from a -CO- radical and the radical —— C ——

n = 0 or 1, and

wherein when n = 1, U is a -CO- radical.

107. The composition according to claim 1, wherein said composition is in a form chosen from sunscreens.

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